

## ARCHIVES OF OTOLOGY.

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REPORT OF A CASE OF MASTOIDITIS, COMPLICATED BY PURULENT MENINGITIS, ENCEPHALITIS, PHLEBITIS OF SIGMOID-SINUS, JUGULAR BULB, AND INTERNAL JUGULAR VEIN. OPERATION. RECOVERY.

By JAMES F. McKERNON.

*(With Temperature Chart on Text-Plate VII.)*

THE following case is reported because it presents several interesting features, especially the meningeal and brain complication, which the otologist not infrequently meets with, and seldom with recovery.

The patient, a male aged twenty years, was seen in consultation with Dr. H. D. Chapin, on March 31, 1905. The following history was obtained from his mother. He had always been well, except for the usual diseases of childhood, and a severe attack of articular rheumatism, when he was twelve years of age. Two weeks before he had an attack of follicular tonsillitis, lasting four days, and one week later he complained of a pain in his ear, severe in character, lasting four days, during which spontaneous rupture of the drum-membrane occurred. This was followed by partial relief for five days, when pain became severe again, and he was taken to an aurist who incised the drum-membrane, when he was again relieved of pain for several hours. This recurred again during the early hours of the following morning, and was quickly followed by severe pain, referred to the right

side and top of the head, vomiting, dizziness, restlessness, and groaning, with intense thirst.

Physical examination showed a well-developed adult of twenty years who was exceedingly restless, tossing from side to side of the bed, his eyes tightly closed, both hands clenched, and emitting groan after groan with at times a high-pitched inarticulate sound. Upon opening the eyes he would cry out with pain; the pupils were irregular with but little reaction, the left being smaller than the right; tongue dry and glazed, as were also the lips. The pulse was 100 per minute, full and bounding. Rectal temperature was 104.4, respiration 24. He would lie quietly as though in stupor, when suddenly he would arouse, ask for water, and again become exceedingly restless.

*Aural Examination.*—In the right auditory canal was found a bloody serous discharge, upon which being removed disclosed a bulging drum-membrane with a small opening in it just above the region corresponding to the eustachian entrance to the middle ear. The postero-superior canal wall was in a state of collapse, hiding from view the postero-superior quadrant of the drum-membrane. Pressure over the right mastoid caused the patient to cry out with great pain, but upon further investigation it was found that pressure upon the other mastoid or any part of the skull brought forth a like response. The left ear was negative. A diagnosis of mastoiditis with meningitis was made and an immediate operation was advised as the only probable means of saving his life, and it was explained to his family that in his present condition, recovery following operation was extremely doubtful. They, however, requested that every effort be made to save his life, and within an hour he was removed to the Post-Graduate Hospital and prepared for operation. A smear from the right auditory canal was taken to the laboratory for examination, and a report quickly given that the infection was that of the diplococcus intercellularis meningitidis. A differential blood count was also made which showed a polynuclear percentage of 94, with a leucocyte count of 11,600.

*Operation.*—Chloroform was given and the usual mastoid incision made. When the flaps were retracted the external cortex was found to be very dark, almost black in color.



Upon entering the mastoid it was found infiltrated throughout with a thin colored serum, with here and there a cell containing thin milky-looking pus. The large medullary spaces posterior to the sigmoid groove contained the same characteristic looking pus and serum as that found throughout the mastoid proper. The bone comprising the zygomatic ridge was extremely cellular and found infiltrated, and was removed in its entirety from a point well forward anteriorly to a considerable distance farther back than where the sinus passes transversely toward the torcular, this removal exposing necessarily the entire floor of the middle fossa in this region. The dura thus exposed was bulging and showed an intense redness over its whole area. It was found impossible to remove all of the diseased bone without making a transverse incision posteriorly, and when divested of its bony covering the entire descending limb of the sigmoid sinus as well as the dura over a portion of the cerebellum was exposed. Here it was free of congestion as compared to the dura covering the exposed area of the middle fossa above. After completing the operation, the exposed dura of the middle fossa corresponding to the roof of the mastoid antrum was incised horizontally over the bulging area, with the result that several drachms of turbid fluid were evacuated, and the dura flaps were retracted and the brain tissue beneath inspected, with negative result. The opening in the dura was not closed, the entire cavity was packed with iodoform gauze, and the patient returned to bed in good condition. The length of the operation was less than an hour. The pus taken from the mastoid as well as the fluid evacuated through the opening made in the dura was examined and found to contain quantities of the same characteristic infection shown from the smear examination, namely, *diplococcus intercellularis meningitidis*. As the range temperature, pulse, and respiration is here appended, I will not specify in detail as to their variations, as a study of the chart will show them. For several days following the operation, the patient was never conscious, except once for a few minutes. This was on the fourth day early in the morning, and lasted only about five minutes, during all of which time he exhibited many, if not all the symptoms of a typical meningitis. The external dressings on the mastoid had to be changed twice a day,

owing to their saturation, which undoubtedly came from the opening made in the dura. The wound itself was dressed on the third day, showing but little if any repair. Ice caps were kept on almost continuously up to this time. Several lumbar punctures were made, the amount withdrawn showing on the chart. All of the fluid obtained by lumbar puncture was turbid and showed quantities of the same infection as that before examined. The pupils were unequal throughout the entire seven days. The eye-grounds were examined three times during this period with negative results. On the eighth day following the operation the patient regained consciousness, the ice caps were removed and kept off for two days, to be reapplied upon his complaining of severe headache in the region of the wound and vertex. The wound was dressed every day, and both the external dressing and packing were found saturated with fluid, but less in quantity at each subsequent dressing. On the ninth day following the operation, the patient complained of feeling cold, and within a few hours exhibited a rise of temperature to 104.8 F. Believing we had a sinus phlebitis to deal with, I asked permission to explore this blood channel, but was requested by the family to wait. During the next four days there were no rapid excursions of temperature, the variations not exceeding two degrees. There were, however, several evidences of a chill, some vomiting every day, and the patient began to look septic. The wound upon dressing at this time showed but little repair, and where before the dressings had been saturated, they were almost dry. That portion of the sinus divested of its bony covering did not exhibit its usual lustre, was somewhat grayish in color, and looked flatter than the average sinus when exposed. The blood examination at this time showed upon differential count a polynuclear percentage of 90.8 with white cells numbering 7600. The following day the patient's condition was about the same as the four previous days, except that he complained of pain in the neck of the affected side. Physical examination here disclosed tenderness along the anterior border of the sterno-mastoid muscle, and some enlarged glands could be felt. Again operation was advised and this time consented to.

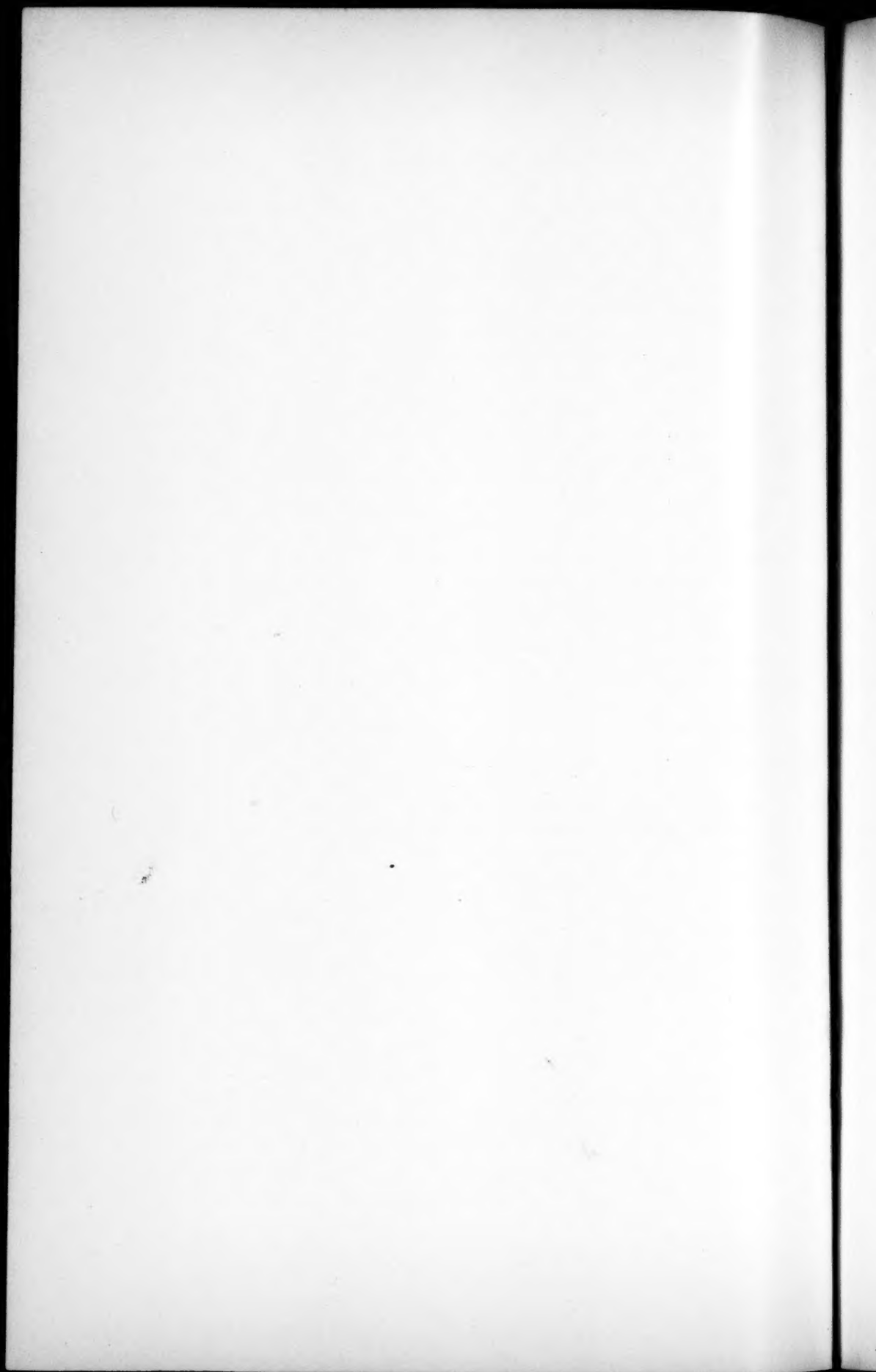
*Second Operation.*—Chloroform was administered and the sinus exposed for one and three-quarter inches posterior to the

knee above, and down to the bulb below. It was covered throughout its entire exposure with a grayish exudate except the last half-inch exposed. A free incision was made with a scalpel in its anterior wall at about the centre of exposure, and a few drops of pus exuded. There was no bleeding. The operative field was covered with gauze and the neck prepared for the removal of the vein. The internal jugular was exposed, ligated, and resected from the clavicle below to its exit to the skull above, as well as a portion of its tributaries, which were found involved. The lower two inches of the vein contained fluid blood, while all above this was filled with clot. The walls of the vein below at the clavicle were not thickened, macroscopically speaking, but above, just external to the foramen, the walls were found very much thickened. Several enlarged glands were encountered during the course of the dissection and removed. The neck wound was then protected with moist warm towels, and the contents of the sinus above evacuated, where plenty of pus was found, and a large amount of broken down and disintegrated clot. Working back toward the torcular, a firm clot was found completely filling the lumen of the vessel, and upon its removal a free hemorrhage was established from this end. The disintegration below, above the bulb, was very marked, the broken-down clot with pus being about the consistency of thick molasses, and of a reddish brown color. A sufficient portion of the bony wall of the bulb was removed posterior to and below the facial canal so as to permit the passage of a curette into the bulb, and after but little manipulation, free hemorrhage was established in this locality, the origin of the blood being of course from one or both petrosal sinuses. The hemorrhage was apparently as free as we would expect to find it were the vein below intact and performing its usual function (a point which should not be forgotten, as many operators tell us that in phlebitis of the sinus proper, where a free hemorrhage is established here, it is not necessary to prolong the operation, as the blood which is present comes from an unobstructed vein below. This demonstration, as well as many others that have been made, shows us, I believe, conclusively that the source of such bleeding is from the petrosals and not the vein below, as we may have a vein obstructed and still obtain blood from this

region. There was considerable sloughing of the posterior sinus wall extending as far back as the cerebellum, and this was removed by the scissors. The wound above was dressed in the usual way, the neck wound was flushed with a hot saline solution, a cigarette drain was introduced, the opening closed with a continuous silk suture, dressed with gauze soaked in a warm saline solution, and the patient returned to bed in a rather poor condition. For the following two days his condition remained so, although he was conscious, and took a fair amount of nourishment. A study of the chart will show that three days after this operation there was a rise of temperature to 102.8 F. Both neck and cranial wound were now inspected, the former being found in good condition with primary union from end to end. The cranial wound, however, was not in as good condition, as over the cerebellum, where the sloughing edges of the dura had been cut away, there was a protrusion about the size of an English walnut into the mastoid cavity of the cerebellar tissue divested of its covering. This mass was very soft and pulpy, and was removed with the scissors down to its base, and a drain composed of a wick of gauze was introduced into the cerebellar tissue for about three quarters of an inch. The wound was dressed each day only to find mass after mass of disintegrated cerebellar tissue protruding into the mastoid wound. Upon three different occasions these masses were incised freely with the scissors deep into the cerebellum, but in a few hours their place was taken by more tissue of a like character. A further study of the chart will show that for five days after the development of this encephalitis there were wide and rapid variations of temperature, but no evidence of a chill observed. On the seventh day following the operation the wound looked quite as unpromising as the previous days, and after incising and removing more cerebellar tissue, a cotton-tipped probe was dipped in a solution of silver-nitrate, of the strength of 480 grains to the ounce, and the entire cerebellar cavity that was exposed was freely mopped with this application and a large amount of boric acid placed in the cavity, and on this a very loose dressing of gauze was applied. From this time on there was no protrusion beyond the surface of cerebellar tissue; there was, however, an abundant slough as the result of







this application. The cavity in the cerebellum began to fill slowly, so that at the end of ten days it was even with the surface and each time the wound was dressed, an application of 360 grains to the ounce of silver-nitrate was made, so that at the end of two and a half weeks the surface presented rather a firm cicatrix, and later it protruded somewhat anteriorly, but always maintaining its firm scar-like appearance on the surface, and finally, as the wound filled in, became covered with skin, and to all appearances became perfectly firm. The neck wound healed without further complications, and one year after operation the hearing on the affected side became normal. The mastoid wound presents the usual post-operative appearance, with seemingly no more fulness than the average. The suture line in the neck, however, presented somewhat of a keloid appearance at this time. I think there can be little doubt that this was a case of purulent meningitis, plus the other complications that were present as cultures made from the fluid evacuated through the dural opening, as well as those made from the fluid obtained by lumbar puncture, showed a true growth of the *diplococcus intercellularis meningitidis*. This brings up the question of early operation in cases of purulent meningitis. It would seem rational to operate early, drain these infected areas, and treat them on general surgical principles rather than to stand idly by and see the vast majority terminate fatally. I believe that in the future this should be done, for even though only one case in several recovers, this in itself is a distinct gain, for now they are nearly all fatal; but, with improved surgical technique, may we not hope for more favorable results in the future.

## REPORT OF CASES OF MASTOIDITIS IN THE AGED.

By HENRY A. ALDERTON, M.D.

THESE cases naturally divide themselves into two classes: the first with perforation of the drum membrane and more or less discharge of purulent character through the external auditory canal, and the second without perforation of the ear-drum and consequently no escape of the products of inflammation. Most of the cases reported in this paper were seen during the past two years, either in hospital or private practice.

### *Class I.*

CASE I.—Bernard M., age seventy-one, referred by Dr. OLMSTEAD. General condition, average; had not slept well for three months. Three months before being seen, following a "cold," had a great deal of pain, which persisted for two months in ear, then subsided and located in the mastoid; constant tinnitus in left ear preceding the appearance of pain and continuing; more or less discharge. Examination showed pus in left canal, granulations at fundus protruding through perforation, and surface of drum membrane the seat of a chronic granular myringitis; the region over the mastoid insertion of the sternocleido-mastoid muscle was swollen and red and had been so for three or four weeks; on the surface of this swelling was a sac, formed by the elevation of the skin, containing pus; the mastoid region was swollen and tender. The pus sac had existed for only a day or two.

*Operation.*—The pus sac was incised and about half an

ounce of pus was evacuated; a probe found its way to the inner surface of the mastoid apex. The granulations in the middle ear were thoroughly curetted. The outer table of the mastoid, at the apex, was hard and about  $\frac{3}{8}$  of an inch in thickness. On lifting off the outer table of the mastoid process, pus oozed out freely under pressure, the probe immediately sinking through granulation tissues to the medial wall and finding two perforations into the digastric groove, separated by a slender bridge of bone. The bone between this cavity in the tip and the mastoid antrum was very little affected; the cavity in the tip extended well under the sigmoid groove. Patient ran very little temperature before or after operation. Pain was entirely relieved, and patient slept better than he had in three months.

One week and a half after operation, patient began to complain of soreness in the throat. Two days after, moderate swelling appeared in throat just back of the posterior pillar of the fauces on the left side; this swelling was tender to the touch and firm. Dr. JONATHAN WRIGHT was called in consultation and incised swelling without result. Considerable odor to breath, but in the next few days the swelling in throat rather diminished than otherwise; patient complained of some slight pain behind ear, with some frontal headache, but could swallow with comfort. Six days after appearance of throat symptoms, something broke in the throat early in the morning and the patient expectorated two or three mouthfuls of pus. From this time throat gave no further trouble; after the rupture, on syringing through the mastoid wound, some fluid escaped into the throat. Patient then went on to complete recovery. Bezold mastoiditis.

CASE 2.—Charles E., age fifty-seven, referred by Dr. KUHN. General condition poor; has bronchitis and liver trouble. Began to be hard of hearing about one and a half years previously; had had pain in ear off and on for six months following discharge in left ear. Suffered from headaches, constipation, and dizziness; pulse 72, temperature 98.9°. Examination showed marked mastoid tenderness over and around the left mastoid antrum, posterior canal wall bulging, pus in canal, granulations at fundus. Right ear showed

pus in canal and a kidney-shaped perforation, inferiorly, of drum membrane; granulations on promontory.

*Operation.*—Assisted by Drs. KUHN, HUSSEY, and SHATRUCK. Found large abscess cavity, under intact outer table of mastoid; this cavity was filled with purulent cholesteatomatous debris, under pressure, so that a worm of the material was forced out through the opening made in the outer table. This cholesteatomatous mass had destroyed a large part of the posterior wall of the *osseous canal*, pushing the soft parts before it; it had also disintegrated all cellular structures toward and into the mastoid antrum. A sequestrum composed of the pars tympanicus and posterior portion of *annulus tympanicus*, together with a portion of the floor of the antrum—otherwise, the posterior superior osseous canal wall—came away. Patient made an uninterrupted recovery.

*Class II.—Without Perforation of Drum Membrane or Discharge.*

CASE 3.—Mrs. Elizabeth P., age sixty, referred by Dr. PEARCE. Seen first April 9, 1907. History: About September, 1906, lost hearing in both ears, following a "cold"; the right ear recovered after a time; no discharge from either ear. From February 1st, was troubled with neuralgic pain over left side of head, especially over occipital region; two weeks ago developed pain and some tenderness behind the left ear; later swelling appeared over mastoid, which gradually extended above ear and backwards over occiput. Pulse, temperature, and respiration normal. Canal normal; drum membrane normal in position, but thick and rather opaque.

*Operation.*—Incision evacuated pus; outer table over antrum and zygomatic cells necrosed. Great destruction of cellular structure of mastoid process, with exposure of dural covering of the middle cerebral fossa and of sigmoid sinus, which latter was covered with granulations. Necrotic bone was found all through zygomatic cells well forward, and also posteriorly and far back into occipital bone. The deep cells lying under the sigmoid sinus were also extensively affected. Uninterrupted recovery with good hearing.

CASE 4.—Paul R., age sixty-nine, referred by Dr. JOSEPH MYERS, May 1, 1907. Patient had had hardness of hearing



in the right ear for three months; six weeks ago had pain in right ear, lasting three weeks, extending over temporal and parietal regions; past three weeks some headache and considerable deafness in both ears. Patient came for relief of deafness. Examination: impacted cerumen in both canals, after removal of which he heard much better in left ear but not in right; right drum appeared thick and opaque and slightly reddened. External auditory canal was normal. No tenderness over mastoid process. Just posterior to the mastoid apex at its base and over the occipital portion of temporal bone was some swelling deep in over bone, which was moderately tender to pressure; this swelling extended down deep in neck to a point about on a level with the angle of the jaw. Temperature slightly subnormal, pulse normal. General condition excellent. May 3d, operation: outer table of mastoid fairly healthy, on removal of which opposite mastoid antrum a small cavity containing pus was exposed; extending the wound downward to apex through fairly healthy bone, discovered a number of large cells in tip and under sinus wall in towards jugular bulb filled with granulation tissue and pus. The mastoid apex was entirely removed and the cells followed under sigmoid sinus; the sinus wall up to the jugular bulb, by the destruction of the sigmoid groove, was exposed and covered with unhealthy-looking granulations. Immediately below these basal cells, there came a free flow of about a half-ounce of pus from the deep tissues of the neck. The mastoid incision was extended downwards along the anterior border of the sterno-cleido-mastoid muscle, and a blunt dissection was done up to the transverse process of the atlas before the track followed by the pus was reached; as there was also a pocket of pus posterior to the transverse process of the atlas, another incision was made posterior to the sterno-cleido-mastoid muscle and by blunt dissection this pocket was also reached. Patient made an uninterrupted recovery, with the temperature never going above 101° F.

CASE 5.—Mrs. W. B. S., age fifty-three years, referred by Dr. HOXSIE, seen February 29, 1908. Right ear had been troubling her for about one month, following a "cold"; no previous ear trouble; started as a dull ache which lasted about two weeks, when she consulted Dr. Hoxsie, complaining

of very severe occipital neuralgic pains on the right side, worse at night. There was no discharge from the ear, but some swelling of the posterior superior wall of the external auditory canal in its osseous portion; also some tenderness, not at all marked, over right mastoid. Patient complained of considerable buzzing tinnitus. Examination: canal showed sagging of posterior-superior wall close to drum membrane; drum membrane dull and congested, with its epidermal layer roughened and soggy from douchings; slight mastoid tenderness over three points, antrum, tip, and emissary vein. Temperature normal, pulse 100-110, respirations 20.

*Operation.*—Outer table normal, cellular structure showed here and there throughout areas of softened bone with cells containing pus and granulation tissue; this condition extended above into the zygomatic cells, below into the basal cells, up to the wall of the jugular bulb and around the wall of the sigmoid groove, internally up to the inner table, which was fortunately intact, posteriorly into the occipital bone. The mastoid emissary vein was a large one whose bony canal extended through the occipito-mastoid suture into the occipital bone and so out; it was necessary to isolate this, as it lay in the cellular structure, and in removing an area of necrosis in its bony wall the vein was punctured with free outflow of healthy blood. Controlled by pressure and operation was completed. Uninterrupted recovery with no temperature above 99° F., except the post-operative rise to 100 $\frac{1}{4}$ °.

Through the courtesy of Doctors W. C. BRAISLIN and S. LUTZ the writer is enabled to add two more cases to this report, thus including all of this type that have been operated on at the Brooklyn Eye and Ear Hospital the past twelve months.

CASE 6.—Sebastian H., age sixty-five, patient of Dr. W. C. BRAISLIN; admitted December 18, 1907. About six months before, after sleeping in a draught, developed pain in right ear. Later the ear began to throb; no discharge; no posterior auricular tenderness at that time. This condition never entirely disappeared. About two weeks previous to entrance, pain returned with severity and accompanied by throbbing; still no discharge; about one week later posterior auricular

tenderness appeared. Temperature  $100\frac{1}{2}^{\circ}$  F.; pulse 96; respirations 22.

*Operation.*—By Dr. BRAISLIN: bone sclerosed and on entering antrum some pus and granulation tissue was discovered. On removal of mastoid apex, bone was found softened over sigmoid sinus, which being removed evacuated a peri-sinus abscess, thus leaving the sinus exposed. The patient made an uninterrupted recovery.

CASE 7.—Joshua D., age fifty-six, patient of Dr. STEPHEN B. LUTZ; admitted August 25, 1907. About three months ago noticed fulness and cracking noises in both ears; four weeks later the ears began paining violently and more or less pain has persisted since. Has headaches centred at middle of head, accompanied by considerable dizziness. Examination: right external auditory canal normal, right drum membrane congested but very little bulging; pain not severe over mastoid some tenderness; ear throbbing; left ear normal. Temperature  $100\frac{3}{4}^{\circ}$  F.; pulse 94; respirations 20.

*Operation.*—By Dr. LUTZ: external table comparatively healthy; removal of outer table showed whole of mastoid process, except tip, filled with pus and granulation tissue. Cells in the root of the zygoma filled with pus, and removal of affected bone exposed the dura. There was considerable pus and granulation tissue in the cellular structure posterior to the sigmoid sinus. The patient made an uninterrupted recovery.

A review of the seven cases brings to light the unusual proportion, five to two, which the cases of mastoiditis without perforation of the drum membrane or discharge bears to those with perforation and discharge; and this is all the more remarkable in that Case 2 was probably one of chronic suppurative otitis media before the inception of the attack which finally resulted in operation. Also notable was the absence, in the majority, of any marked systemic disturbance because of the local inflammatory process; headache or neuralgias and sleeplessness being the symptoms mostly complained of, at times with throbbing or buzzing tinnitus, and, in the most of the cases, hardness of hearing in the affected ear.

The character of the inflammation in all was of low grade and long duration, the irritation symptoms not being urgent enough to impress the patient with the necessity for any drastic measures toward their relief; they experienced rather discomfort and uneasiness than any feeling of malaise, and the general condition remained excellent—this notwithstanding the gross changes which had taken place in the mastoid bone, with or without exposure of the covering of the intracranial structures.

Noteworthy, also, was the resistance of brain and its sinuses to the septic foci in direct juxtaposition. This, and the comparatively moderate amount of tissue necrosis, when the duration of the inflammatory process is remembered, must be attributed to the lessened tendency to reactive inflammations which obtains in the later years of life. Cases showing the same amount of tissue necrosis, duration, tolerance of the intracranial contents to neighboring foci of infection and lack of middle-ear involvement we have all met in younger people, but, in the writer's experience, without any such proportional frequency; the uniformly good result of operative interference in all of these consecutive and unselected cases is also remarkable.

Of course, given these pathological conditions, it is to be surmised that a number of similar cases, undetected because the path of infection passed slowly intracranially without drawing the attention of the attending physician to the primarily involved region, have gradually passed into the oblivion of the undiagnosed, and consequently are not obtainable for comparison.

## DOUBLE MASTOIDITIS, SIGMOID-SINUS AND JUGULAR THROMBOSIS.

By SEYMOUR OPPENHEIMER, M.D.

*(With Chart on Text-Plate VIII.)*

On the night of the 28th of January, M. L., female, aged twenty-two, was seen by me in consultation with Dr. Krause, of Jersey City. The patient had had a recent "grip" spontaneous perforation of the left drum membrane, after earache had taken place. The discharge, at first sero-sanguineous, speedily became purulent. Paracentesis of the right drum membrane had been performed four days later, followed by profuse discharge; temp. range during this period was low. The day before my examination, temp. rose to 103 deg., patient complained of great deafness, with pronounced vertigo, not alone upon moving, but even when lying quietly in bed. Pronounced spontaneous nystagmus was present, oscillations being both lateral and rotary; there has been some nausea and vomiting, and considerable frontal headache; mental condition extremely dull. Tuning-fork tests showed pronounced diminution of higher tones. The left ear showed marked tumefaction, and the posterior part of the drum membrane had a perforation situated in its posterior-superior quadrant. There was slight excoriation of the canal wall, but no definite prolapse. Mastoid tenderness questionable. The right ear showed a central perforation with considerable swelling of the Schrapnellian membrane.

The following day, January 29th, the patient was removed to Mt. Sinai Hospital, Private Pavilion. On January 30th, the labyrinthine and meningeal symptoms had pronouncedly increased, and the patient presented all the evidences of a mastoiditis of a very high grade, on the left side. Culture



showed streptococci infection. Under gas-ether anæsthesia the usual curvilinear incision was made behind the left ear. The mastoid process was very small, and its cortex extremely thick; pus was found in the cells of the tip over the sinus, and under great tension in the antrum. The sinus lay very far forward, encroaching on the posterior bony canal-wall; the antrum was extremely small. A small area of the sigmoid sinus was exposed. All diseased bone having been removed, the operation was completed. Two days later it was found necessary to operate upon the opposite ear. The mastoid process was extremely small, the sinus was displaced very far forward, and lay very superficial. At the second stroke of the mallet the sinus was slightly injured, giving rise to free bleeding, which was, however, easily controlled, the operation being continued. The mastoid process contained but few cells, and was filled with pus; much difficulty was experienced in finding the mastoid antrum, which was extremely small (anatomical explanation of labyrinthine and meningeal symptoms). Temperature 104 deg.; white blood count 19,000; polymorphonuclear count 86%.

Following operation the temperature for the ensuing two days ranged between 101-104 deg. On the third day the temperature remained between 100-101½ deg. At this time the report of blood culture given me was to the effect that five colonies of streptococci were present in each cubic cm. of blood. The patient complained of feeling chilly, very restless and nervous, complained of much headache, nausea and vomiting; no decrease in polymorphonuclear count or leukocytosis.

On the following day it was decided, not on the strength of the clinical manifestations, which were absolutely too indefinite to assume the presence of a sinus thrombosis, but in view of the finding of streptococci in the blood, to explore the sinus. Both sinuses were laid bare by removing the overlying bone, both were incised; there was free bleeding both from the distal and proximal ends of the sinus on the left side; on the right side the wall of the vessel seemed thickened and striated. This corrugated striation I have seen repeatedly in phlebitic processes. Upon incision, at first there was no free bleeding for some seconds, then to be

followed by a sharp gush of blood. The thrombus was not found, being evidently washed out.

Two days later an attempt was made to dress the wound, but considerable hemorrhage took place from the sinus upon both sides; it being the eleventh day after the sinus operation before the packing from the right side could be removed without bleeding, during which time it was impossible to properly inspect the wound. The temperature for this period is showing a very irregular course, the patient apparently losing ground, the slight yellowish tint of the hands suggesting a low grade of sepsis. General physical examination, negative; eye-grounds showed a questionable retinal congestion, possibly a little more on the right than on the left side.

February 16th-19th: Temperature for three days practically normal. Patient looks no better, but feels well. Blood cultures taken on successive days have shown increase in the number of colonies of streptococci in the blood from five to sixty to each cubic *cm*, one culture showing sixty colonies to the cubic *cm*, taken during this period of three days normal temperature.

During this time the Laboratory was hot on my heels to proceed. Very slight indefinite tenderness developed along the course of the right jugular vein, with enlargement of cervical glands.

On the night of February 19th, temperature suddenly rose to 103.8 deg., preceded by a chill. Operation was then determined on, consisting of an exsection of the right internal jugular vein. An incision was made along the border of the right sterno-mastoid muscle. The distal end of the vein was tied off low in the neck, and the dissection carried upward and forward; the tributary veins were ligated and exsected, the jugular then being ligated and exsected as close to the jugular bulb as possible. Slight periphlebitis present below the facial vein, the latter vein apparently normal. The appearance of the jugular above the level of the facial was markedly different from that below this point. The vein was white, firm, flat, densely adherent, with marked inflammation of the lymph nodes about it. A series of enlarged glands along the course of the vein were removed, a cigarette drain introduced, and the neck incision closed. The mastoid

was then dressed, the sinus laid open, and free bleeding established from both ends.

It is interesting here to note that although the jugular had been ligated and exsected, free hemorrhage occurred from the jugular bulb, showing that bleeding from the proximal ends occurs as well as from the inferior petrosal sinus. A blood culture had been taken the day of the operation; the report submitted the following day showed but two colonies of streptococci to each cubic *cm*, as against sixty colonies at the previous culture. This is an extremely interesting point as showing that at the moment bacteria were not being swept into the circulation.

Examination of the clot found in the jugular vein showed streptococci; microscopical section of the jugular clot showed adhering thrombus, with streptococci in the approximating wall of the vein. Three days after the jugular operation, another blood culture was taken, which proved to be sterile.

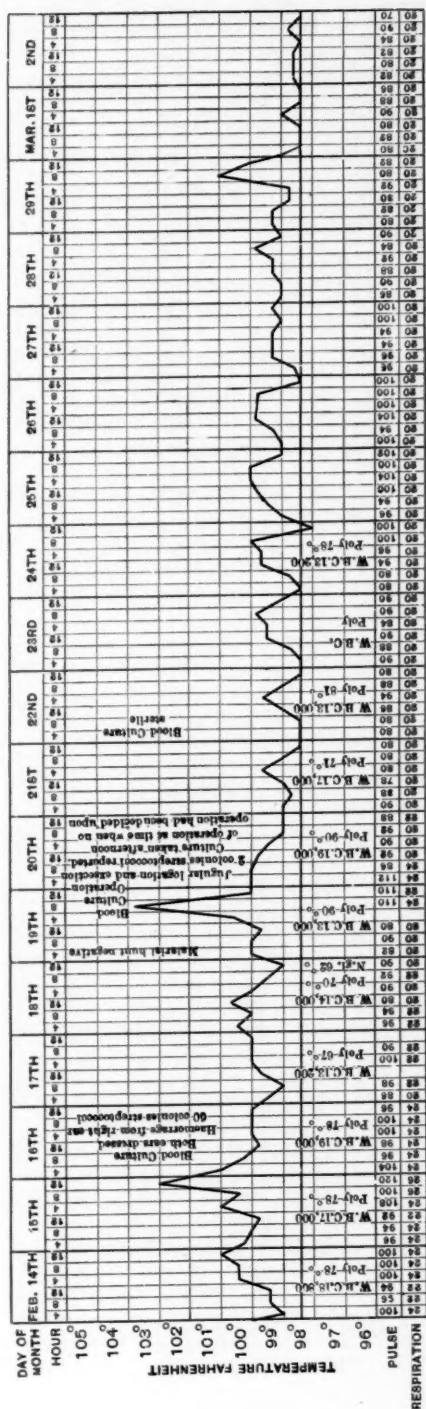
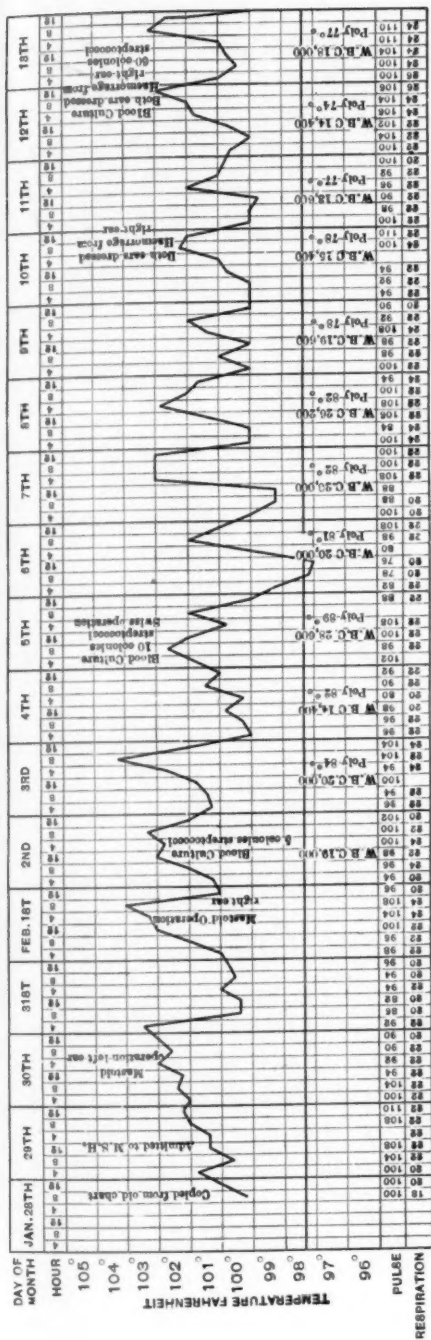
The patient has made an uneventful recovery, the temperature dropping to normal and remaining so immediately after the jugular ligation and exsection.

The points of great interest in this case are the extremely atypical course; the absence of all definite clinical signs of a bacteriemia, although the blood cultures showed streptococci to be present.

To those who place little credence on the polynuclear count in otological surgery, it is interesting to observe the results of daily counts in this case in their relation to the clinical symptoms. Note the sudden polymorphonuclear rise from 60% to 90% on February 29th. Although all who had the patient under observation felt that matters were not progressing satisfactorily, yet nothing was present on which to definitely make a diagnosis of an infective thrombosis.

Furthermore, by a curious coincidence it seems at the times when the reports of blood cultures were received, the patient was invariably in better physical condition, and presented fewer evidences of being ill, which added to the general indecision to undertake additional operative

ILLUSTRATING DR. OPPENHEIMER'S ARTICLE ON "DOUBLE MASTOIDITIS, SIGMOID-SINUS AND JUGULAR THROMBOSIS."







procedures. It is thoroughly borne in mind that patients with infective thrombitic lesions present an entirely different aspect during the remissions of the temperature from that at the time of the exacerbations. Yet by consulting the temperature charts, it will be seen that these were not the low temperatures of a few hours, but rather remissions covering a period of several days.

While I feel as a clinician that it is not for the laboratory to establish the diagnosis of sinus thrombosis for the otologist, yet in cases of mastoidal disease, ante- or post-operative, which manifest an unusual or indefinite course, the value of the blood culture cannot be underestimated, particularly as it has been definitely proven that mastoidal disease *per se* does not produce a bacteriemia.

## CASE OF RECURRENT KELOID OF SCALP AND LOBULE OF EAR.<sup>1</sup>

By GERHARD H. COCKS, M.D.

(With Text-Plate IX.)

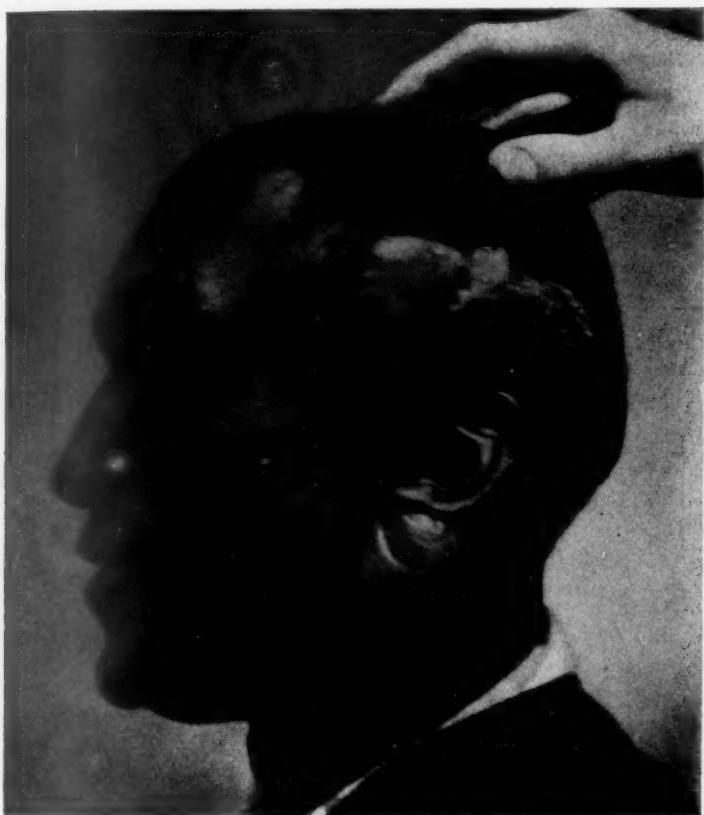
Negro man, forty-two years old. His father had a tumor on the neck, and his mother a tumor about the size of a dollar on her arm. I have not been able to determine whether or not these growths were keloidal in character.

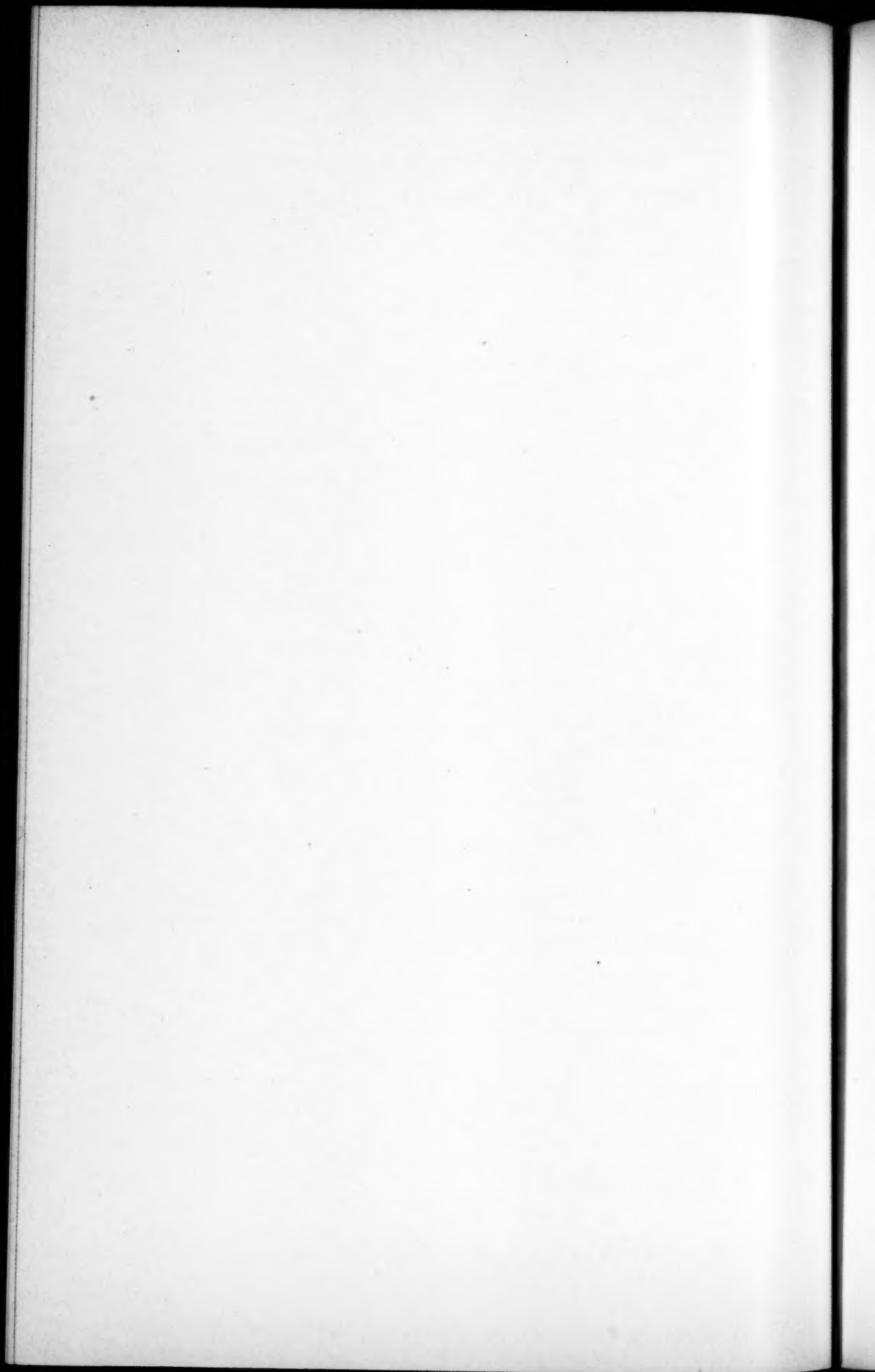
Fifteen years ago this man was struck by a glass bottle on the scalp directly behind the ear. The skin at the site of injury was slightly broken. Six months later a swelling appeared. When it had reached the size of a hen's egg it was removed by operation, only to promptly recur. There have been four operations in all, at various hospitals,—the first nineteen years ago, the second two years later, the third two years later still, and the fourth in 1902. At this time skin grafting was done. From 1902 until 1906 the growth has steadily increased in size. The patient seeks relief from the unsightly deformity and from itching. He does not experience any pain.

As shown in the photograph, there are two tumors connected by a linear scar back of the ear. The larger, which springs from the scalp some distance above and behind the auricle, is a crescentic mass  $6\frac{1}{2}$  inches long and  $1\frac{1}{2}$  inches

<sup>1</sup> Presented before Otolog. Section N. Y. Acad. Med., March 13, 1908.

ILLUSTRATING DR. COCKS'S "CASE OF RECURRENT KELOID OF SCALP AND  
LOBULE OF EAR."





wide at its broadest part. The surface of the tumor is irregular, the skin over it is dry and rough. The tumor itself is firm and uneven to the touch. The base is broad. The smaller keloid is attached to the lobule. It is globular in form, pedunculated, and measures about  $1\frac{1}{2}$  inches in diameter. In consistency it is not so hard as is the larger fibroma.

On the patient's back, over an area the size of a man's hand, at the place whence skin was taken for grafting, there is considerable hypertrophic scar tissue, as well as about a dozen small keloids, the largest of which measures an inch and a half in diameter, and the smallest about one-third of an inch.

The varieties of growths to be considered in this case are: (1) hypertrophic scar tissue; (2) keloid. Hypertrophic scar tissue differs from keloid in that it never extends laterally beyond the tissue substance which it replaces, *i.e.*, never invades surrounding healthy tissue. It is therefore clear that this variety does not concern us here.

For years it has been customary to divide keloids into two varieties: (a) those that arise at the site of burns, cuts, syphilitic scars, acne, etc., called **scar keloid**, **false keloid**, or **secondary keloid**; and (b) those that are believed to originate in normal and uninjured skin, designated as **idiopathic**, **primary**, or **true keloid**. Of late years writers have been giving up this classification, and now it is considered extremely doubtful that a keloid can arise without some form of traumatism, however slight. The microscopic distinction supposed to exist between the two varieties is that while both tumors are composed of horizontal strands of fibrous tissue which originates in the corium, in true keloid the papillæ with their normal covering of epidermis are seen above the growth, whereas in false keloid only scar tissue exists over the tumor.

Perhaps the best results will be obtained by op-



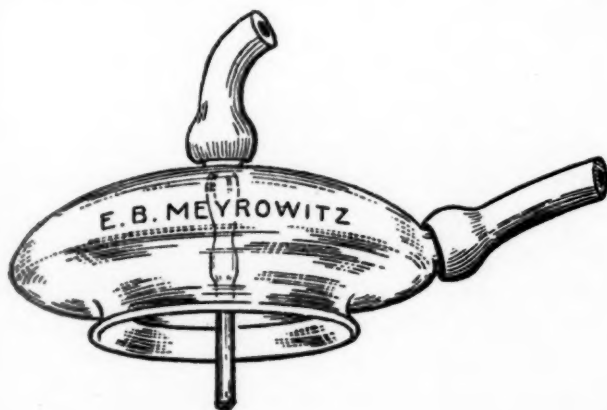
eration, followed by X-raying the scar. It might be better, however, in view of four operative failures, to use electrolysis or thiosinamin injections. Suggestions for treatment are invited from the members of the Section.

## A NEW INSTRUMENT FOR THE TREATMENT OF DISEASES OF THE EAR.<sup>1</sup>

BY DR. EDMUND PRINCE FOWLER, NEW YORK.

*(With two illustrations in the text.)*

FOR many years I have been experimenting with syringes, irrigating devices, and suction apparatus endeavoring to obtain one which could be safely intrusted to patients for use at home, and at the same time efficiently cleanse the external auditory canal, and establish and maintain adequate drainage.



I believe I have succeeded in having constructed a very simple little instrument, which not only accomplishes the above, but one having several other actions, which will

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<sup>1</sup> Presented at the meeting of the Otological Section, N. Y. Academy of Medicine, April, 1908.

be brought to your attention, during its description and demonstration.

The apparatus consists of a glass bell, so designed that its rim fits accurately about the auricle, wholly inclosing same, preventing any back flow or accumulation of fluid from wetting the patient or those administering the treatment, and subjecting the meatus to no pressure or possible traumatism. From the top and centre of the glass bell projects a nipple, for connecting the apparatus with its source of fluid supply, a fountain syringe. Projecting inward from the nipple is a nozzle, glass in its proximal and soft rubber tubing in its distal portion.

The arrangement is such that this soft tubing can enter the external auditory meatus, taking a direction inward, downward, and forward, thus coinciding with the axis of a normal canal.

The nozzle extends about one half inch beyond the rim of the bell in order that the fluid used may properly irrigate, and the end of the nozzle remain necessarily at a safe distance from the deeper portions of the canal.

On the circumference of the bell is situated the outlet nipple, to be connected with rubber tubing, the latter draining into a washstand basin or any suitable receptacle.

The apparatus being made of glass insures at all times a clear view of the parts under treatment and makes cleansing and sterilizing easy.

A glance at the machine in action will demonstrate at once its perfect safety, simplicity, and cleanliness.

The nozzle velocity will of course vary with the height of the supply bag above the ear, but with the ordinary fountain syringe this velocity will always remain within safe limits. With every foot of elevation, a pressure at the nozzle of about 22mm mercury is obtained. About two feet above the ear is the amount of head usually used by me.

Up to the time I devised this douche my experience with

irrigations administered by the methods usually employed had not been especially pleasing, but in suppurative otitis I could find nothing better to cleanse the canal and promote drainage, and so I used this method. Likewise with suction I experienced only partial success. The apparatus I now show you irrigates safely, efficiently, and simply, but does more, it irrigates in the presence of a partial vacuum. It is this combined action which I especially desire to bring to your notice.

It is brought about by the tight joint between the rim of the bell and the side of the head about the ear and by the syphonage through the drainage tube constantly tending to produce a vacuum, something after the manner of a Sprengel's air pump.

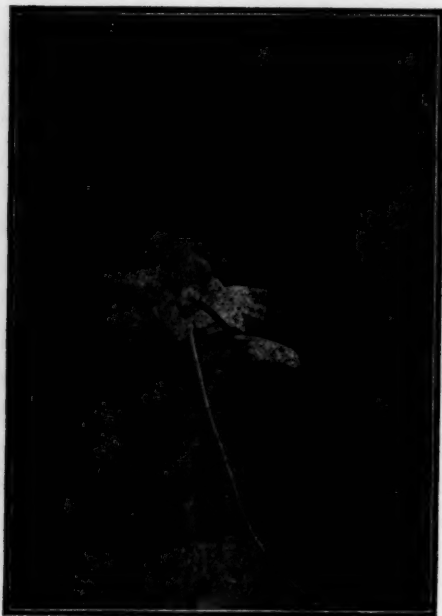
This vacuum is proportional to the length of the drainage tube, and I find that two feet will produce a negative pressure of about 30*mm* mercury.

Sometimes the suction is not quickly established owing to lack of sufficient fluid in the drainage tube. When this is the case a few moments' pressure on this tube will enable it to fill with the fluid and on releasing the pressure, syphonage and its resultant suction will ensue. The ear will stand very strong suction but I believe the amount mentioned above is sufficient, and in all cases safe and painless even to the normal drum membrane. It is remarkable how much better this combined irrigation and suction establishes and maintains drainage than does either action alone. It draws the pus, detritus, and inflammatory exudate to the surface and the irrigating fluid washes them away. It leaves the tissues clean, and without the boggy appearance resulting from ordinary irrigations.

It produces a combined active and passive hyperemia locally in and about the ear with all the concomitant benefits claimed for this treatment. It gently massages and milks the tissues; it tends to prevent adhesions between the drum and promontory, and to break down any

newly formed. It does all this and more, and for a definite length of time at every treatment, depending on the amount of fluid supplied.

In children it is often most difficult to irrigate the ear without wetting all concerned in the operation, and, with the inexperienced, great harm may result from the struggles of the child causing traumatism to the parts.



When the suction bell douche is adjusted about the child's ear, one hand can steady it and the other hand the head of the child, and it is then almost impossible for the child to wriggle from under control or cause any damage.

In a few irregular skulls, it may be difficult to obtain a tight joint between the glass rim of the bell, and the side of the head. When this is the case, adequate suction may be obtained by encircling the rim with an ordinary half-inch wide rubber band of such length that it will snugly



envelop the edge of the rim and form a cushion to fill up the depressions.

Time will not permit my going into all the virtues of my apparatus, but before closing I wish to demonstrate its action, by the use of a glass model I have had constructed showing the hydraulics of the auditory channels.

This model shows very prettily how under ordinary irrigation it is impossible to cleanse the middle ear through a small perforation in the drum, and how easily the middle ear and even the Eustachian tube may be flushed out by using my douche as follows:

After the douche is adjusted about the ear and suction has been established, pinch the outlet tubing, and make strong pressure on the bell to maintain a tight joint between it and the side of the head about the ear. Continue pressure until the fluid fills the tubing and overflows into the bell. This accumulation of fluid will compress the air inside of the glass bell and external meatus, and necessarily force any fluid from the latter into the middle ear. On releasing the pressure and establishing suction the fluid as you see is easily withdrawn from the Eustachian tube and middle ear and we have accomplished an efficient flushing of these cavities. Note that it is impossible to force fluid into the Eustachian tube unless this passageway is open, and also that not a single drop of fluid has found its way into the mastoid cells.

This latter fact is due to the air pocket contained therein preventing the fluid from entering beyond the *aditus ad antrum*.

At the Manhattan Eye, Ear, and Throat Hospital I have in several cases thus used the douche, and the results of the treatment have been very satisfactory. In the treatment of mastoiditis many of my colleagues have had remarkable results with the suction bell douche and our cases going to operation have been markedly reduced in number since its advent. It is with difficulty that I refrain from going more into detail regarding the uses and

results of treatment with this apparatus, as I am most enthusiastic and confident that it is all I claim for it. Of course it is not adapted to cleansing the ear of inspissated cerumen, and in the case of thick or dried exudates hydrogen peroxide or other means should be used to remove these before the douche is applied.

Perhaps I should mention, before closing, that patients rarely complain of dizziness or tinnitus while undergoing this suction irrigation, and that even little babies seem to enjoy it after they have learned how gentle is its action and how clear it leaves the ears.

I believe its action is along good surgical lines, and I hope its continued use may prove of great benefit to those suffering from otitis media and its complications.

A CASE OF SINUS THROMBOSIS, FOLLOWING  
REMOVAL OF GRANULATION TISSUE FROM  
THE MIDDLE EAR; EXCISION OF THE IN-  
TERNAL JUGULAR VEIN; RECOVERY.<sup>1</sup>

By EDWARD BRADFORD DENCH, M.D.

THE removal of granulation tissue from the middle ear is not ordinarily supposed to be a dangerous operation. Macewen, in his classical work on the *Pyogenic Diseases of the Brain and Spinal Cord*, was one of the first to call attention to the fact that the removal of granulation tissue from the tympanic cavity might lead to serious intracranial involvement, by the opening up of new avenues of infection through the freshly cut surfaces.

The case which I am about to present well illustrates, I think, this fact.

The patient was a young girl fourteen years of age, who came to the New York Eye and Ear Infirmary complaining of a purulent discharge from the right external auditory meatus. The patient said that this discharge had been present since early childhood. For some weeks before the patient came under observation, there had been considerable pain in the ear, which had gradually increased. There had also been some headache and sleeplessness. On examining the ear, I found a profuse, foul, purulent discharge, coming from the right external auditory canal. The meatus was almost completely filled by a mass of firm granulation tissue. On

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<sup>1</sup>Read before the Otological Section of the New York Academy of Medicine, April 10, 1908.

palpation, the mastoid process was somewhat tender, although this tenderness was not very well marked. Realizing the danger of the removal of the granulation tissue in an outpatient, I advised the patient to enter the hospital. I felt certain that a radical operation would be necessary for the relief of the purulent otitis, but—in order to obtain immediate drainage, and also to secure, by free irrigation of the ear for a number of days, a more aseptic field of operation—I asked my house surgeon to remove the granulation tissue from the external auditory canal as a primary procedure. The patient was in the hospital twenty-four hours before this operation was performed. The temperature on admission was about  $99^{\circ}$  in the morning, but rose to  $101^{\circ}$  in the evening. After the patient had been in the hospital for twenty-four hours the granulation tissue was removed, under general anaesthesia, by the house surgeon. On the morning of the day of operation, the temperature was about  $99^{\circ}$ . In the evening the temperature suddenly rose to  $104\frac{1}{2}^{\circ}$  from no assignable cause other than the slight operation for the removal of the granulation tissue. There was no chill, the patient complaining only of slight prostration and slight headache. The temperature gradually fell, so that on the following morning it was normal. On the afternoon of the day after operation, however, the temperature suddenly rose to  $106^{\circ}$ , and the patient felt slightly chilly. The general condition of the patient was exceedingly good; the pulse was about 120 and of good quality, and, aside from slight prostration, she complained of no discomfort. A blood count at this time showed a polymorphonuclear percentage of about 82, with a considerable leucocytosis,—exactly what, I do not remember. The mastoid tenderness was about the same as when the patient was admitted to the hospital.

Owing to the fact that we had to deal with a case of chronic purulent otitis media, in which drainage had been obstructed for a long time, and in which a sudden rise of temperature occurred from no other assignable cause than the opening up of some fresh avenue of infection, I felt certain that we had to deal with a case of infectious sinus thrombosis, apparently induced by the slight operation upon the middle ear. I proceeded at once to perform the radical operation. Extensive

caries were found in the tympanic cavity, and a typical tympanic exenteration was performed. The lateral sinus was exposed from a point just above the bulb to a point just beyond the knee. The sinus was found to contain a firm clot. The clot was removed by means of the curette, and free hemorrhage was obtained from the torcular end of the sinus. The cautious use of the curette, in a direction toward the bulb, was not followed by hemorrhage, and I proceeded at once to excise the internal jugular vein. The vein was excised from a point just below the omohyoid muscle to a point about one half inch below its emergence from the base of the skull, all tributary veins being divided between two ligatures. A certain number of enlarged lymphatic glands were found overlying the vein, and these were removed.

After excision of the vein, the wound in the neck was closed by interrupted silkworm gut sutures, throughout its entire extent, a small opening being left at the lower angle for drainage, and a narrow gauze drain was inserted throughout the entire length of the wound. The upper angle of the wound was also left open, and a packing of iodoform gauze inserted, in order to shut off the wound in the neck from the divided end of the jugular above. The post-auricular wound was allowed to remain open, but the usual plastic operation was performed upon the auricle, so as to obtain a large external meatus.

The patient made an uninterrupted recovery. The temperature never rose above  $102^{\circ}$  after the operation, and this was on the day immediately following the excision of the jugular.

About ten days after the radical operation and excision of the jugular, the patient was again placed under general anæsthesia, and the entire cavity resulting from the radical operation was lined with a Thiersch graft; the posterior wound was closed by interrupted sutures. The wound in the neck was by this time completely healed, it having united throughout by primary union. After suture of the post-auricular wound, recovery was uninterrupted. The tympanic cavity was completely dry four weeks after grafting was performed. Microscopic examination of the clot in the sinus and



in the upper portion of the internal jugular showed that the infection was due to streptococcus.

The result, in this case, was certainly most satisfactory. I have reported the case in detail to emphasize the necessity of caution in the performance of an operation so apparently simple as the removal of granulation tissue from the middle ear. I am convinced that in no case should the granulation tissue from the middle ear be removed, excepting where the patient can be kept under close observation. After an operation of this character, the temperature should be taken at frequent intervals, and the patient should be kept perfectly quiet. In this instance, there is no doubt in my own mind that we had to deal with a sinus thrombosis following chronic purulent otitis media, but that the thrombus in the sinus was practically aseptic, or possessed very slight septic qualities, until the granulations in the external auditory meatus were removed. This opened up a fresh avenue of infection, and the clot in the sinus became infected with active organisms, broke down, and systemic symptoms immediately made their appearance.

## EUSTACHIAN CATARRH WITH HYPERINFLATION; REPORT OF A CASE.

By WILLIAM C. BRAISLIN, M.D.

SURGEON, BROOKLYN EYE AND EAR HOSPITAL.

**I**NFLAMMATION of the Eustachian tube in which motions of the pharyngeal muscles involved in swallowing, talking, and mastication produce over-inflation of the tympanic cavity is apparently rare. Such a case recently observed is herewith recorded.

M. H., a young man, clerk in the department of customs, called, complaining of great nervousness due to the following symptoms: He experienced a sensation of fulness in the ears and a slight dulling of the hearing occurring with, or increased by, each act of swallowing, chewing, and talking. There was likewise a sensation when speaking as if he were talking in a hollow, resonant space—the latter a common symptom. His hearing was not greatly impaired. The symptoms have existed in varying degrees since a year ago, when he states, "he took a heavy head-cold." Both ears at times take part in the affection; at present the right ear is worse. He had been Politzerized for a time by a physician, then treated by an osteopath. About five months ago he had an attack of earache.

In addition to the above history I found that as he talks he "sniffs." This, he says, relieves the full, uncomfortable sensation in his ears, momentarily, but when he talks it returns. Eating or swallowing aggravates his symptoms, causing the ears to "fill up," so that he eats rapidly, being very uncomfortable until the mouth is empty, when he again "sniffs"

and by this means relieves the "fulness of his ears" until the next act of talking, swallowing, or masticating.

Posterior rhinoscopy revealed some hypersecretion at the mouths of the tubes. Valsalva's experiment exaggerated his symptoms. Blowing the nose also increased his discomfort. Politzeration increased the degree of his symptoms. Contraction of the levator and tensor muscles of the palate, tending to draw open the Eustachian tube, ordinarily relieves the discomfort of tubal obstruction in its milder forms. In this case all motion of the throat aggravated them. The patient obtained partial relief by strong, quick inspiration through his nose—an emphatic form of the act commonly termed "sniffing." This relief lasted only until the next act of swallowing, speaking, or chewing.

Gomperz (ARCH. OF OTOTOLOGY, xxv., 1896, p. 407) described a somewhat similar condition observed by him, in a paper entitled: "Typical Alteration of the Tension of the Membrana Tympani in Valvular Occlusion of the Eustachian Tubes." In his cases there was bulging of the postero-superior quadrant, otherwise the drum membrane was normal. Gomperz gave the symptoms of this disorder as fulness in the ears, slight noises, and occasional deafness, while the most cautious blowing of the nose created a feeling of air striking against the membrane. In my case the obstruction in the tube offered no bar to the ingress of air but only to its exit. I believe these cases occur in tubes with an unusually patent lumen; but on the occasion of an inflammation partly closing the tube, probably at or near the pharyngeal mouth, so that temporary condensation of the pharyngeal atmosphere easily overcome the resistance which the swelling imposes, Gomperz saw some bulging of the *Mt*. I noticed none at any of the several examinations made. Relief to my patient was rather easily effected. Inflations of air or vapor of all sorts were omitted after a preliminary trial. Applications were made to the mouths of the tubes. A posterior hypertrophy of the turbinate of one side was snared off. A slight recurrence appeared after about six weeks, but quickly subsided. At present he is free from any discomfort referable to the ears.

## DO NOT REMOVE THE THROMBUS!

BY DR. F. VOSS OF RIGA.

Translated by Dr. GERHARD H. COCKS, New York, from *Zeitsch. f. Ohrenhkk*, Vol. LIII., p. 315.

**N**OW that we are in a position to look back upon a long series of operations for otitic sinus thrombosis it is time to attempt a revision of our operative methods.

Little need be said of the **skin incision**. In the last few years I have sutured the upper part of the retro-auricular rectangular incision, and have often fixed the lower edges of the cut with a pair of stitches. The lower and posterior angles should remain open for drainage.

The incision in the neck for ligation of the jugular must not be closed. A gauze tampon is introduced into the sheath of the vessel. If the jugular is already thrombosed, the upper thrombosed end remains to serve as a natural drain. The ligature on the lower and sound end of the vessel is cut off short. At the first dressing the upper end is drawn down by slight traction upon the suture and the end of the vessel is cut off close to the ligature.

The **bone operation** must be described in more detail. For 4 years I have maintained, in cases of sinus thrombosis connected with healed otitis media acuta, that the sinus should be exposed without previously opening the mastoid antrum. For all other cases my rule is to remove diseased bone, wherever found, at the time of the sinus

operation, whether I am performing the radical or the mastoid operation for acute cases.

All spots in the bone which show even slight pathological changes should be followed up. This course has led me to the sinus, when no sign of its disease could be discovered.

A man 25 years old, whose ear had previously been healthy, 4 weeks before admission to the hospital complained of chilly sensations and arthritic pains. After a few days he noticed pain in the right ear accompanied by purulent discharge. One week before admission there was a post-auricular swelling which soon disappeared. When admitted, Jan. 19, 1902, T. was  $37.4^{\circ}\text{C}$ , sensorium completely free, eyes normal, pulse regular and strong, 84. Heart and lungs negative. In the right auditory canal was a moderately abundant purulent secretion. Canal swollen, perforation not visible. The entire mastoid showed moderate oedema and tenderness upon pressure, the latter being especially marked at the tip. Jan. 20, pulse 84-90, T.  $36.8^{\circ}$ - $37.3^{\circ}\text{C}$ .

*Operation*, Jan. 21. The entire mastoid tip was destroyed by pus and granulations. The soft spongiosa was easily curetted away down to the jugular bulb, which was healthy. The antrum was also filled with pus and granulations. While examining the bone cavity, a brownish red discoloration was seen in the upper posterior part of the spongiosa. When cut away, a drop of foul-smelling pus was exposed. The skin incision was then prolonged by a horizontal posterior cut, and the bone operation continued. I next came upon a walnut-sized epidural abscess, lying over the horizontal limb of the sinus. The sinus wall was thickened, reddish-brown, and sunken. A thrombus 4cm long was found at a distance of about 4cm from the knee. At both ends the sinus appeared to be healthy. No ligation of the jugular. Excision of the sinus wall. The thrombus was reddish-brown in color, solid, not broken down. The skin flaps were fixed in position by two sutures and the wound packed. The patient made an uneventful recovery.

This case shows conclusively what rôle diseased bone



plays. From an inconspicuous, slightly discolored spot, a small channel passed 4cm through surrounding healthy bony tissue to an epidural abscess and thrombosed sinus. The knee, descending limb of the sinus, and bulb were perfectly healthy. Clinically there was no proof of sinus disease. Only the systematic removal of the diseased bone led to the discovery of pus in an unusual location. The jugular was not ligated because the thrombus was undergoing absorption.

From the moment that we begin exposing the sinus we must constantly bear in mind that unnecessary manipulation of the same is highly injurious. Sponging should be done as carefully as possible. Throughout the operation we must remember the danger of dislodging portions of the thrombus into the general circulation where they will cause metastases. This possibility should influence our actions and regulate our treatment.

The aural surgeon uses, almost exclusively, mallet, chisel, and bone forceps. The latter instrument, in my opinion, is dangerous and should be discarded. In the next to the last annual report of the Halle Clinic (*Arch. f. O.*, Bd. 65, pp. 55-137), I read that sinus injuries have increased of late. On pages 111 and 113 it is directly stated that these injuries resulted from the use of bone forceps.

After exposure of a sinus **all palpation to diagnosticate the presence of a thrombus is absolutely contraindicated.** The statement, **Do not remove the thrombus**, cannot be reiterated too often. I wish to protest against Whiting's remarks, "that a thrombus completely obstructing the sinus may be recognized without difficulty by inspection and palpation." Directions follow: "With parietal thrombi we depend almost entirely upon palpation." In the description of the method of removal of an obturating thrombus of the jugular bulb, Whiting writes: "The supposition that a freshly formed and loosely adherent thrombus can be torn away from the vessel wall and dis-

lodged into the general circulation is scarcely tenable. The danger is exceedingly slight, provided, when exercising the attempt, that the necessary precaution is observed" (namely to palpate in a direction from the bulb toward the torcular).

The following case shows how easy it may sometimes be to dislodge a thrombus.

On Aug. 8, 1896, an 18-year-old patient was admitted to the hospital with a history of bilateral suppuration since childhood. The pus had always been foul-smelling. There had never been any discomfort until 4 days previously, when sharp pain in the left ear with headache confined to the left temporal region was experienced. The temperature rose above 39° C. Examination at the time of admission showed tenderness to pressure over the left mastoid process, especially posteriorly. After the removal of a small polyp the malleus and a remnant of the drum were seen. Slight purulent secretion present. As the pain and tenderness continued, an operation was performed Aug. 10th. At a depth of 1cm a cholesteatoma the size of a bean was found. The wall of the posterior fossa was absent over an area about 2cm in diameter. The dura was covered with dark red granulations and sticky pus. While sponging I noticed a linseed-sized coagulum on the sinus wall. As this was wiped away it gradually unrolled and proved to be a blood-clot 5-6cm long, about as thick as a knitting-needle, which had been floating in the sinus stream. There was some bleeding from the lentil-shaped perforation in the sinus wall. Plastic-bandage. At the second dressing the aperture in the sinus had closed. The patient made a good recovery, although a large retro-auricular opening persisted. I have not found, either in reports of operations or autopsies, a single case which showed a clot of this length floating in the sinus. If the vessel had been stroked to empty it of blood or for diagnostic purposes, this clot, which had so slight a point of attachment, would surely have been dislodged into the general blood stream and have caused infarction.

**The diagnosis of the presence of an obturating thrombus**

can be made by the eye and aspirating syringe. It is essential that the syringe be air-tight and the piston easy to draw. The glass recording syringe now in the market, holding 2g, meets these requirements. The 1gr size is not reliable.

The puncture should be made as soon as the sinus is exposed, because many a sinus that appears normal to the eye, turns out to be thrombosed. Often about a half gram of dark fluid can be obtained in the syringe. If this is now squirted out upon a white background, we are able to recognize that it is brownish-red and not venous-colored. Furthermore, only a limited amount of this fluid can be withdrawn, the barrel of the syringe remaining partially empty. This last serves as a point of differentiation from a pervious vessel. If the puncture into the sinus is made with the paracentesis needle or small scalpel, the distinctive color of the fluid cannot be discerned, because the darkly colored dura obscures our appreciation of the color.

When reading published reports of operations we note an oft-repeated inconsistency. While it is stated that the external appearance of a sinus is no indication of the condition of its contents and that an apparently sound sinus may often be completely thrombosed or even filled with pus, yet we see between the mastoid operation (with exposure of sinus) and the sinus operation intervals of 2, 4, and even 6 days. Writers repeatedly express astonishment at finding a sinus completely thrombosed when it seemed healthy at the first operation. They venture the suggestion that the thrombosis must have existed previously. The aspirating syringe will clear up the situation at once and thus spare the patient the danger of a second and unnecessary narcosis.

My rule now is, in every case where sinus thrombosis is suspected, to straightway expose the sinus and aspirate. If the presence of a thrombus is verified, the operation

is interrupted while the jugular is ligated and divided. We then freely expose the sinus, going 1-1½ cm into healthy parts. Centrally we proceed only as far as the neighborhood of the jugular foramen, which must not be opened, lest we disturb the obstruction, which is often very firm.

#### THE ATTACK ON THE SINUS.

The sinus should be opened at the same session at which we determine the existence of a thrombus. Whiting lays emphasis upon caution in making the incision to avoid injury of the visceral wall, and states that he has seen this accident happen. He gives the following directions: "The incision should be large enough to enable the operator to introduce a small curette into the sinus and to manipulate it comfortably both forwards and backwards, with great caution on the visceral, but energetically on the parietal wall."

The goal is the complete removal of the entire thrombus. The Halle Clinic pursues the same course, as shown in the yearly report for 1898, where the sharp curette is frequently mentioned. As a motive for this energetic treatment it is alleged that the sinus must be completely freed of its septic contents. The curetting is continued, until, as Whiting expresses it, "the circulation is again restored," *i. e.* until ordinary bleeding shows that the lumen is again patent. "The bleeding should not be checked too thoroughly or too quickly since loosely adherent particles, which have eluded the curette, may often be washed away." I believe this position is the same as that held by the Halle Clinic and its pupils, Leutert, Grunert, etc. The parietal wall of the sinus is merely incised; in exceptional cases, if very much changed, it is partially excised. Hemorrhage is controlled, according to Whiting, by packing gauze into the incision or by tampons passed into the bulb, in Halle by tamponing into the lumen in both directions.

Is the ideal goal of these writers, namely, complete removal of septic material, really attained? If we were dealing with a vein in an extremity, the thrombosed portion could be ligated and excised, and a clean wound thus obtained. In the case of the sinus, where ligation and excision cannot be executed, a clean cavity is an impossibility. Energetic curettage can only diminish the amount of septic material, never remove it in its entirety.

The question may well be asked, does not this energetic treatment cause certain dangers, not formerly present, which are injurious to the already weakened patient? The answer is found in the annual report of the Halle Clinic: "We have repeatedly seen patients unexpectedly collapse in the course of after-treatment, and often the condition was so grave that death would have intervened, had it not been for the speedy employment of energetic measures" (*Arch. f. O.*, Bd. 65, S. 71). It seems to me that the cause of the patient's weakness is the energetic bleeding to which he is subjected, both at operation and later, when the wound is dressed. Numerous instances may be found in the Halle reports.

We are told by Whiting to use the sharp curette "with great caution on the visceral wall, but energetically on the parietal." Notwithstanding this caution, surely exercised in Halle, we see in the autopsy report from this clinic (*Arch. f. O.*, Bd. 62, S. 141), "On the medial wall of the lateral sinus was a defect the size of a pea, corresponding to a similar hole in the cerebellum. Not a trace of pus was found at either place, showing that the perforation was probably an artificial one."

To summarize our objections to the too energetic method portrayed above, we find:

1. That it is impossible to completely remove all septic material from a sinus; we can merely diminish the amount.
2. The dangers, especially of hemorrhage, are not merely imaginary, for repeated and severe collapses



have been observed, particularly during after-treatment.

3. Injury of the brain by the sharp curette is not only possible, but has actually been observed.

Taking these facts into consideration, it is high time to cry: **Away with the sharp curette! Do not remove the thrombus!**

But what shall we do? I have already said that it is often possible, in the case of a thrombus not broken down, to aspirate a half gram of brown fluid. This fluid, together with subsequent products of decomposition of the thrombus, causes the high fever and must be eliminated from the system. Simple incision of the sinus wall is not sufficient, the wall must be excised throughout its entire extent.

My method is as follows: the sinus wall is incised over the entire length of the thrombus. The incision not only reaches to the end of the clot, but  $\frac{1}{2}$ – $\frac{3}{4}$  cm beyond. Then the entire outer wall of the sinus is cut away with scissors, so that the thrombus, throughout its entire extent, is freely exposed. The thrombus itself is allowed to remain *in situ*. **Free drainage of the infectious material is now assured**, and we can leave the thrombus to its fate. After inserting gauze, in many cases I have sutured, in part, the skin wound over it, taking care to leave apertures through which the packing can later be removed.

According to this method I have operated 48 cases of sinus thrombosis with 17 deaths, a mortality of 35.42%, and a cure of 64.58%, in a disease which gave a mortality of 92.6% in pre-operative days (statistics from the Berlin University ear clinic—2 cures in 27 cases—*Arch. f. O.*, Bd. 56, S. 72). These statistics embrace, in all, 111 cases. Of the remaining 84, 52 died, *i. e.*, 61.9% mortality. But 16 cases must be subtracted, where the cause of death was other than sinus thrombosis. There remain, then, 68 cases with 36 deaths, a mortality of almost 51%. The mortality of my own series of cases, without deductions, is 35½%. Unfortunately the Halle



statistics have not yet been published, and a comparison with the results of that clinic is therefore impossible.

In the **after-treatment** of the operative cases general surgical principles should be followed more closely than reports from various clinics seem to indicate. If we provide free drainage, it is not necessary to use the curette in the sinus, to irrigate through the jugular vein to dislodge small particles of thrombotic material, or even to press upon the side of the neck to evacuate pus at the base of the skull.

The author holds that the continuance of post-operative fever, of the pyæmic type, is not due to the presence of thrombus rests, centrally situated, but rather to insufficiently free drainage of septic products.

## FOREIGN BODIES IN THE NASAL CAVITY AS A CAUSE OF MAXILLARY EMPYEMA.

BY DR. G. KREBS, HILDESHEIM.

Translated by Dr. GERHARD H. COCKS, New York, from *Zeitsch. f. Ohrenhkl.*, Vol. LIV., p. 141.

IT is not generally recognized that foreign bodies in the nose may induce suppuration of the accessory nasal sinuses. I have not found this etiological factor of empyema mentioned in the text-books or literature to which I had access. Prominent writers dispute the fact that suppuration of the nasal cavities (such as occurs from the long-continued presence of a foreign body) arises without the existence of a phlegmon or periostitis of the accessory sinuses. For example, G. Killian<sup>1</sup> writes: "It is questionable whether purely mechanical infection occurs from purulent material being carried into the sinuses from the nose." Further, Zuckerkandl assumes the extension of chronic inflammations from the nose into the sinuses without proving this fact.

This proof I hope to furnish in the two following histories.

CASE I. M. M., 11 years old, whose family history is good, came to me in June, 1901, complaining of nasal obstruction.

Examination: Slightly hypertrophied pharyngeal tonsil; left nasal cavity normal; right nostril contains a foreign body covered with a hard crust and considerable foul smelling pus. This foreign body, when removed with Hartmann's

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<sup>1</sup> Heymann, *Handbuch der Laryngologie und Rhinologie*, iii., 992.

forceps, proved to be an infant's rubber nipple. Neither mother nor patient suspected its existence. It had been present in the nose since the child was fed with a bottle, at least seven years.

Fourteen days later I saw the patient again. The nasal obstruction was entirely relieved. Examination of the left side showed a stream of thin pus coming down from the posterior part of the hiatus semilunaris above the inferior turbinate. There were no ulcerations or carious spots. On transillumination of the sinuses the right antrum and the right pupil were dark. Trochar puncture disclosed a large amount of pus in the maxillary antrum. The child's parents refused operation.

On March 22, 1907, I again examined the patient, now grown to womanhood. She did not complain of any nasal symptoms. Examination: left nostril normal; in the right nostril, filling the hiatus semilunaris from the anterior to the posterior end, was a yellow, shining tumor, somewhat granular on its upper surface, and having a broad base. Pus flowed over the upper posterior surface, apparently from the mouth of the maxillary antrum. Transillumination of left frontal sinus clear, right less so. Left maxillary antrum bright, right very dark. Teeth healthy. The right antrum was irrigated through the natural opening with a Hartmann canula, and a large amount of yellow foul pus washed out. Probing and irrigation of left antrum revealed nothing abnormal. A second transillumination of the antrum after irrigation showed the same dark spot as before. The patient refused further treatment, as she experienced no annoyance.

It is reasonably certain in this case that a maxillary empyema is present (and perhaps also an empyema of the frontal sinus). That this is the result of the presence of a foreign body in the nose for a number of years, which produced a purulent rhinitis, is highly probable, especially in view of the absence of the usual causes of antral suppuration, such as carious teeth, syphilis, etc. The second case is more convincing, because I had an opportunity of examining the nose before the lodgement

of the foreign body, and of assuring myself of the healthy condition of the sinuses.

CASE 2. W. S., farmer, 33 years old, always healthy, came under my care because of nasal obstruction, left side.

Examination: large solitary mucous polyp left nostril, springing from hiatus semilunaris. No pus, all accessory sinuses clear on transillumination. The polyp was removed with a wire snare. The following week I again examined the patient and did not find the slightest symptom of sinus disease.

On October 1, 1907, the patient returned to my office with the following story: After the polyp operation the nose was entirely healthy. In October, 1906, while working a thrashing machine, he noticed that a grain of corn flew into his left nostril. When breathing he felt it move forward and back, but did not succeed in blowing it out of the nose. During the following week the left nostril became more and more obstructed and a yellowish red discharge appeared, inflaming the margins of the introitus.

Examination of left nostril: at the introitus eczema and rhagades. The left nasal cavity is filled with purulent secretion. On the floor is a large movable tumor. Above, the tumor appears to extend into the middle meatus. At this point the secretion assumes a fibrinous character, making it impossible to accurately define the limits of the tumor. The entire mass was removed without bleeding by slight traction with a forceps. The tumor is torpedo-shaped, about 5cm long, 2cm thick; superior surface partly smooth, partly uneven, the consistency and color in places exactly the same as is the case with a nasal polyp. In other places the growth is redder and softer. On the edge of the tumor is a grain of corn.

Microscopic examination (Kgl. Path. Institut zu Göttingen) showed that the tumor consisted of organised connective tissue. After removal of the growth the left nostril appeared inflamed but not ulcerated. Point of attachment of tumor not discernible. Transillumination of accessory sinuses shows great opacity of the left antrum of Highmore. Irrigation through the natural opening gives a large amount of thin pus filled with floccules. A second transillumination after

irrigation still shows a black shadow over the maxillary sinus. For a fortnight the antrum was daily irrigated with boric solution. The suppuration finally ceased, and the antrum transilluminated clear. Five months later I again examined the antrum and found it healthy.

*Summary.*—A grain of corn lodges in the nose of a man whose accessory sinuses are known to be normal from previous examinations. The respiratory current moves this foreign body, perhaps forcing it into a niche in the hiatus semilunaris. Unfortunately the exact location could not be ascertained. It is certain, however, that the foreign body did not lodge in the antrum, for it was afterwards found imbedded in a tumor lying within the nasal chamber. The irritation of this foreign body caused a remarkably abundant growth of granulation tissue, which in the course of time became organized. This large granulation increased the nasal secretion, so that eczema of the nasal introitus occurred. The darkening of the maxillary antrum, after irrigation, showed that the antral mucosa was strongly inflamed. Probably the infection of the antrum occurred not long after the lodgement of the foreign body.

The mode of infection, since there was no extension of an inflammatory process by otitis or periostitis, must be assumed to be aspiration into the antrum of nasal secretion caused by the irritation of the foreign body.

Cases where foreign bodies have lodged for long periods within the nose are not frequently observed. All such patients should be carefully examined to determine the presence of an empyema of one of the accessory sinuses. These people invariably experience such an amelioration of their suffering immediately after the removal of the foreign body that the empyema causes very little annoyance. Therefore we must depend upon the objective examination to determine the exact condition of the sinuses.

## OTITIC SINUS THROMBOSIS AND PYÆMIA.<sup>1</sup>

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Translated with permission of the author by Dr. GEO. E. DAVIS, New  
York, from the *Oesterreichische Aerztezeitung* 1907.

(With three text illustrations.)

I BELIEVE I am justified in reporting the present stage of research in the matter of otitic sinus thrombosis and pyæmia, inasmuch as this research deserves consideration beyond the limits of otology proper.

I shall in the first place speak about the operative procedures on the veins and the venous sinuses and explain the importance these operations bear from the view of operative treatment of pyæmia in general and what the value of this method of operation is according to results.

Otitic sinus thrombosis is caused by infection of the sinus contents by continuity or metastasis from middle-ear suppuration.

It is possible also that by the infection of the smaller veins the disease may extend directly to the large sinuses (osteophlebitic-pyæmia). Otitic pyæmia is therefore always associated with the existence of a sinus phlebitis that is connected with a more or less extensive thrombosis. By thrombosis the sinus lumen may become completely

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<sup>1</sup>Read at the meeting of the Medical Society in Vienna on May 31, 1907, with demonstration of specimens.



impervious (obstructive thrombosis) or the sinus remains still permeable (parietal thrombosis). Both forms of thrombosis must be designated as "infectious thrombosis." On the other hand we may state that in cases of large extradural abscesses the sinus is compressed and hereby—in a purely mechanical way—a sinus thrombosis may occur. It is a matter of course that such a thrombosis has nothing to do with pyæmic or inflammatory thrombosis, yet without doubt in almost all cases this represents only a transitional state, and that the infection of the thrombus occurs from the abscess after a more or less short period. In this case the endophlebitis will be preceded by a periphlebitis and it is now uncertain whether the infection of the sinus contents is caused by penetration of the micro-organisms, or by absorption of toxins. The infection may be imparted to the entire body from the diseased sinus and this, properly speaking, is the time when the pyæmia and—in some rare instances—the bacteræmia begin. With rare exceptions the bacteræmia, after a few days, is followed by death owing to the greater virulence of micro-organisms, whereas pyæmia leads to metastatic, purulent inflammations.

The chief way for the establishment of the metastasis is by means of the external jugular vein of the diseased side, principally in the centrifugal direction of the veins; however, the metastasis may occur through a healthy sinus by means of the jugular vein of the well side (retrograde transmission).

The anatomical relations of the temporal bone and the venous sinuses is of the greatest importance in causing infections of the sinus from the ear. A large venous plexus extends between the brain and the temporal bone, the peripheral chief branch of which is the lateral sinus and the central branch of which is the sinus cavernosus. Between the two extends the sinus petrosus inferior, the sinus petrosus superior, and the sinus petro-

squamosus, the latter being typically present in children and sometimes persisting in adults. If therefore a purulent inflammatory ear disease extends to the endocranium we already have the danger of a sinus infection on account of the relative position of the ear and the sinus. But the base of the pyramid also shows a close relative position to the veins. Below the tympanum lies the bulb of the vena jugularis interna which is sometimes separated only by an extremely thin bone-plate and sometimes is in direct contact with the tympanic cavity in consequence of dehiscence of the floor of the tympanum. Whereas, before, the infection of the bulb was considered to be rare, we now know that it not only frequently represents an accompanying phenomenon of an infection of the sinus sigmoideus but in a good many cases the bulb is the vein region that is first infected. On account of the close approximation of the sinus to the ear the disease can easily spread to the large sinuses of the brain (sinus lateralis, sinus sagittalis), the vena jugularis interna, the sinus condyloidei, the veins and sinus spaces of the vertebral column.

According to the position of the metastasis we may distinguish four kinds of otitic pyæmia: pyæmia with intracranial metastasis, with metastasis in the thorax, in the abdomen, and with metastasis in the muscles and joints. Of course we sometimes meet with cases changing from one form to the other. Especially in cases of chronic pyæmia ending with death the entire body may be affected by metastases; however, from the clinical point of view, we may with good reason hold to the four forms stated above.

Reports, from the time previous to operative treatment, show that the intracranial metastasis by far exceeds the others in number and importance and, among the intracranial diseases, we again find that the purulent meningitis occupies the first place; then follow in order the cases with metastatic lung abscesses and then the

muscle- and joint-abscesses. Proportionally we seldom find metastatic suppurations in the great abdominal glands (spleen abscess).

Purulent pleuritis or peritonitis in almost all cases is caused by the perforation of neighboring abscesses. Only once have I observed a metastatic pericarditis.

The result of otitic pyæmia depends upon the progress of the local disease and that of the metastasis. If the thrombosed sinus shows purulent ichorous contents, either thereby, or by way of metastasis, a purulent meningitis may be produced. And we may tell by that fact alone that at the time when no operation was made in such cases the purulent meningitis was the cause of death in otitic pyæmia. Moreover the metastasis in the thorax and abdomen will, after perforations of the abscess, finally lead to purulent pleuritis and purulent peritonitis. Treating muscle metastasis is less dangerous; we, nevertheless, also observe here that the abscesses will sometimes extend for great distances between the layers of the deep muscles before a spontaneous perforation takes place so that even a perforation to the outside may not heal.

The general conditions may become still more unfavorable through the fact that, by the influence of the micro-organisms contained in the body and the absorption of toxins, very soon a fatty degeneration of all big glands, kidneys, and the heart muscle will take place whereby the vitality of the patient is the more diminished and the fatal end hastened.

From the above we see that otitic pyæmia from its inception is a surgical disease and this is especially to be emphasized when we compare otitic pyæmia with pyæmic diseases having their origin from other parts of the body. In exceptional cases otitic pyæmia may progress favorably by the spontaneous healing of the metastasis and the sinus thrombosis may heal by perforation of the purulent disintegration of the sinus contents, that is to say,

by the formation of an extradural abscess and with connective tissue obliteration of the sinus.

However we must first of all regard these cases as occurring very seldom and that the patient then is only



Fig. 1.—*a*. Thrombus from the sinus lateralis gradually tapering to a point.

*b*. Vena jugularis of the same case extirpated with the bulb and filled with thrombosed matter and pus. Healing. Natural size. (Anton F., op. September 8, 1905.) (Case of Politzer's clinic.) Also see Alexander, *Surgical Diseases of the Ear*, in Albert-Hochenegg's book on surgery.

released of the danger of thrombosis or pyæmia, while on the other hand the extradural abscess or the resulting acute or chronic purulent mastoiditis necessitates surgical treatment.

It is now necessary to refer to the anatomical form of the thrombi (Figs 1-3). The parietal thrombi are more or less flat, terrace formed, often linear or pointed. They are frequently accompanied by a circumscribed periphlebitis corresponding to their position. The obliterating thrombi (Figs. 1 and 2) are cord-like, cylindri-

cal, and gradually taper to a point. Thus thrombi that are not too long will show a typical spindle form. The obturating thrombus only fills the lumen of the vessel completely in its middle part whereas the two ends will extend into the lumen of the sinus which contains blood.

Of greatest importance is the fact that these ends are rather long so that under these circumstances the obturating part will only be about a third of the entire length of the thrombus. The thrombi of the bulbus correspond in their form with the flat surfaces or globular depressions of the bulb (Fig. 3). The jugular thrombi are mostly irregular, string formed, and provided with knots or club shaped processes (in accordance with the incoming vein branches).

In the majority of cases the purulent inflammatory changes of the thrombus are most advanced in the middle part of the same and from there they extend to both ends. In consequence thereof we shall then find the middle part of the thrombus yellowish gray or discolored and both ends deep red. This macroscopic condition, however, does not speak for the non-infectiousness of the thrombus, which usually in its entire length is filled with micro-organisms, indeed, in some cases the middle ichorous part proves to be sterile (the micro-organisms therein having been destroyed) whereas from the dark-red thrombi-ends pure cultures can be developed. Irrespective of this fact there are cases—by no means rare—that show destruction of the thrombus beginning at the ends. We shall still later on have occasion to consider these facts and we must also remember that the obturating thrombus extends far beyond the obstructed section of the sinus into that containing blood.

The symptoms of sinus thrombosis are substantially those of pyæmia—intermittent fever and chill, spontaneous pain, and pain due to pressure on the mastoid and in the frontal and occipital regions.





Fig. 2.—*a*. Cholesteatoma and thrombus from the sinus sigmoideus (Jos. Str., 40 years, op. August 1, 1902; healing).

*b*. Thrombus from the sinus sigmoideus and lateralis (Leop. H., op. December 28, 1903, healing).

*c*. Thrombus from the sinus sigmoideus, bulbus venal jugularis, and sinus petrosus inferior (Ant. P., op. September 15, 1906; healing).

*d*. Thrombus from the sinus sigmoideus (Jos. R., op. February 10, 1906; healing).

*e*. Thrombus from the sinus transversus, sigmoideus and bulbus venal jugularis. (Johann F., 33 years, op. November 30, 1906; healing.) (Case of Politzer's clinic.)



In most cases sudden changes occur in the amount of suppuration from the middle ear in that the secretion either stops, or greatly increases and flows continuously. Further extension of the thrombi, especially to the bulb of the jugular, produces, in consequence of the closure of the deep veins, great distention of the superficial cervical veins with accompanying pressure pains, and restriction of the active and passive movement of the head and neck. In the majority of cases the fundus oculi is unchanged or only its veins are distended and tortuous. On the other hand, in cases of sinus phlebitis or pyæmia, choked disk is a sign of incipient or already developed meningitis. In severe cases occur frequent chills, great temperature variations (several times a



Fig. 3.—Thrombus from the bulbus venæ jugularis and the upper part of the vena jugularis interna (A. Sch., op. July 30, 1906; healing). (Observations at the clinic of Politzer.)

day), and the patient lends the impression of serious illness, lies in a passive dorsal position, shows a jaundiced color, movement of the alae nasi in breathing, dry tongue, feeling of fear, outbreak of sweat. In other cases the general condition is good.

In all cases and in every stage of the disease the diagnosis is not difficult to make; we must, however, not allow the apparent good condition of the patient and the lack of general symptoms to prevent us making an early diagnosis of sinus thrombosis as, indeed, quite frequently the entire result of the operation depends upon an early diagnosis.

The treatment of otitic sinus thrombosis can be only a surgical one and we must repeat once more that otitic pyæmia is decidedly different from all other forms of pyæmia. What are the objects of surgical treatment?

1. Removal of the focus of infection.
2. To confine the pus to the ear thus preventing the formation of metastasis.
3. The establishment of good drainage.

According to our experience the following mode of operation meets these three requirements: The operation must always begin with the ligation of the jugularis. For this purpose the venad jugularis of the diseased side must be laid bare in the middle cervical third; in case it contains a thrombus it is cut through and the upper end, which is sometimes slit longitudinally, is sutured to the upper angle of the throat wound (jugularis cutaneous fistula). The central end can be ligated if the wall of the vein is unaltered and the vein itself empty; if thrombi are found in it or if the wall of the vessel is altered by inflammation, we also leave open the proximal end of the vein and expose it towards the heart until we come to where the vein is normal. In such cases the laying open of the vein will usually have to be extended to the place where the vena thyroidea comes in; in some cases, however, it will become necessary to follow the vena jugularis farther down by temporary resection of the clavicle.

If the jugularis is not thrombosed it must be doubly ligated and cut between the ligatures. We leave the ligatures long in order that we may, after two to four days, in case it becomes necessary, make a secondary jugularis cutaneous fistula.

The cutaneous fistula of the jugular vein serves for the drainage of the vein and the bulb. In making a secondary jugular fistula usually a slight quantity of blood passes at first which is followed by blood serum and later on by pus (sometimes after a few minutes and other times after hours). By the introduction of damp strips of gauze the peripheral end of the vein is kept open and acts as a drainage tube. If the vein contains thrombi with phlebitis in a high degree and inflammatory thickening

of the vein wall, and if the vein is attached to the neighboring parts by adhesions, it is laid bare as far as the bulb and extirpated, after the operation on the ear is completed.

In these cases the thrombus usually extends into the adjacent veins opening into the jugularis. These are cut through in the extirpation of the jugularis, but in order to prevent retention of infectious material they are not ligated.

The advantage of ligating the jugularis consists in the fact that with the immediate operation on the ear itself (as well as when laying open the sinus) we are not afraid of dislodging particles of the thrombi by the jarring produced by chiselling and there is also no danger of air aspiration in opening the veins and sinuses.

In acute cases we perform antrotomy, whereas in chronic cases we do the radical operation, and, in the latter instance, we expose the sinus. Not only the sinus sigmoid-eus but also the sinus petrosi and the bulb of the vena jugularis will have to be laid bare beyond the limits of the diseased area so that the seat of the trouble is easily accessible.

As the sinus phlebitis is almost always connected with pachymeningitis externa and quite frequently also with pachymeningitis interna we must also expose the dura in the neighborhood of the sinuses. If we already have indications of an intradural abscess, the simple incision of the dura will hardly be sufficient and it will be necessary to resect that part of the dura which is the most affected, especially if the inner wall is discolored, covered with fibrin, friable, and ill smelling. In operating, attention must be paid to the fact that the sinuses should not be prematurely opened. Injuring the sinus, especially at the beginning of the exposure, may cause severe bleeding which, though not making the operation impossible, will materially complicate and cause delay.

When the sinus region is sufficiently exposed the sinus

sigmoideus is incised 2mm in length with a scalpel. If there is no hemorrhage the sinus sigmoideus is cut longitudinally and the thrombus is first removed from the peripheral end and then from the central end and the bulb of the vena jugularis. The removal of the thrombus in its entirety is always followed by hemorrhage; however, we may easily control this hemorrhage by raising the patient's head and packing the incision lightly with iodoform gauze. If we have no hemorrhage it shows that the incision was insufficient and must be extended farther. In such cases it will sometimes be necessary to expose and incise the sinus transversus in the peripheral direction beyond the middle, also to open the torcular and sinus sagittalis and in the central direction to entirely open the bulb; the sinus sigmoideus, the bulbus jugularis, and the vena jugularis interna must communicate as one channel.

The aspiration of the sinus contents does not furnish a reliable result for with parietal thrombosis fluid blood can be aspirated. In this case after incising the sinus with the scalpel the blood flows with diminished force but sometimes with apparently normal or increased pressure. We then cover the incision with iodoform gauze and after a few minutes frequently find the thrombus lying in the incision. The thrombus is thus loosened by the flow of the blood and brought to the incision in the sinus from whence it can be removed. In all cases it is the first principle that every attainable thrombus must be removed. Only in a few cases must we be satisfied with incision of the sinus and delay finding and removing the thrombus. The favorable results that we have obtained in the last few years must be mostly attributed to the fact of complete removal of the thrombus.

The claim that the ends of the thrombus may be sterile and make a very good obliteration for the sinus and the jugularis, protecting the body from infection, does not

hold good. The method based on this claim, to only partly remove a dark red thrombus or even to leave it entirely *in situ*, is indeed dangerous. I have stated above that exact bacteriological examinations have shown that in most cases the entire thrombus is infected and that in a great many cases also the macroscopical examination of the thrombus, removed by the operation, shows that the suppuration is most advanced at the end of the thrombus; therefore we may say that the suppuration began at the end of the thrombus. At the same time we must remember the anatomical conditions of the thrombus; the pointed ends remain entirely in the lumen of the sinus when we remove only the central or obturating portion of the thrombus, or the said thrombus ends may be forced out by the blood pressure and be followed by a secondary hemorrhage.

The prognosis of otitic pyæmia above all depends upon the resisting power of the patient and the virulence of the micro-organisms. In general we may say that the case must be considered the more severe the greater the temperature variations in a day.

The prognosis after the operation depends practically upon the operation itself. The more completely we remove the diseased veins and the thrombi the better will be the chances of healing. From this we may conclude that all cases of severe pyæmic character, without markedly developed anatomical changes of the sinuses, are more difficult to prognosticate. Decrease of temperature to the normal immediately after the operation is always a bad sign and may be considered as temperature of collapse which is due to the marked lowered vitality of the patient. Such falling of temperature is usually, after the second or third day, followed by renewed elevation of temperature. Cases with gradual defervescence of temperature will furnish the best prognosis, and such cases in which the differences in the highest and lowest temperature variations in a day become less and less.



In favorably progressing cases the temperature should become normal from the fifth to the tenth day. Recurring metastasis will of course produce again the pyæmic phenomena, first of all chill; however, this may repeatedly appear after the operation without any special complications or metastasis. The packing is renewed according to necessity from the 5th to the 8th day and the strips are gradually removed with the utmost care. In doing so we avoid discomfort of the patient, secondary hemorrhage, and secure a good course of the wound healing.

To sum up the chief steps of the operative technique in the treatment of otitic thrombophlebitis—first we ligate the jugularis and then proceed with the operation on the ear (antrotomy or radical operation); after this we treat the diseased sinuses. It is now the question whether this method may be applied for all cases of sinus phlebitis or whether we may choose a less complicated way of operating in cases not so severe. Even a brief report, embracing the consensus of opinion touching this subject, by far exceeds the compass of this contribution.

I will therefore only refer briefly to all the operative methods and compare with the best known methods the method which is practised most successfully at this clinic.

What operative methods are employed for sinus phlebitis? 1. Mastoid operation. 2. Mastoid operation and exposure of sinus. 3. Mastoid operation, exposure and exploration of sinus with the aspirating needle, eventually incision of the sinus and ligation of the jugularis, at this or a later period. 4. Ligation of the jugular vein. 5. Optional ligation of the jugularis before operating on the ear, and mastoid operation with exposure and obliteration of the diseased sinus. 6. Obligatory ligation of the jugularis before operating and then proceed as stated in 5.

Of these methods we must first of all reject that method which prescribes only ligation of the jugularis. We may say that this method of operation could only have been brought about by a complete misunderstanding of Zaufal's



proposal. In the first place the treatment of otitic sinus phlebitis by merely ligating the jugularis is not to be considered since it is only an accessory procedure simultaneous with the removal of the local suppurative focus in the ear. The operative methods 1-3 are altogether insufficient; theoretically they might be possible in mild cases—this, however, we can never foretell and the result may be that we in almost all cases would be under the necessity of making another operation, which in itself is a trauma, severely injuring the patient, and making the prognosis unfavorable on account of prostration.

These methods are also faulty in so far as they make the physician who seldom sees otitic pyæmia believe that he may or rather must wait on the operation. Therefore we shall be too late in operating since purulent meningitis may be the consequence of all otitic endocranial diseases. Only in this way could it happen that for years competent authors considered waiting and "fractional" operations as a good method and never thought to connect the usual unfavorable results with the operative method. Aside from this it must be said that the ligation of the jugular vein alone is not productive of any benefit, but on the other hand, as I have stated above, it can even lead to detrimental results, and therefore the only surgical procedure which remains at our disposal is the obliteration of the jugular vein.

As operative procedures therefore the methods 5 and 6 remain and now the question arises whether the obliteration of the jugular vein is optional or obligatory.

The theoretical possibility that for individual cases the ligation of the jugular vein is superfluous in the beginning indicates, *a priori*, that in these cases the ligation will not become necessary later. In every case in which at the first operation the ligation of the jugular vein is not done, but in which later it is found that it must be performed—in these cases it should have been done at the first operation. If one does not make these

limitations, we must note that the methods 1 to 3 which we wish to dispense with must be considered. A case in which the jugular operation has not been performed at first and it becomes necessary to perform it later proves that the indications were misleading, aside from the final results. Finally we must remember that, especially in questionable, apparently mild cases, ligation of the jugular vein is absolutely without danger, and represents a surgical procedure which can be completed in a few minutes, whereas, on the other hand, in every secondary obliteration of the jugular vein the patient is subjected to the danger of the trauma of a new operation. It is said that obligatory ligation of the jugularis means a schematic method of operative procedure which should be avoided on account of the greatly varying course of the pyæmia.

A distinguishing feature followed until some years ago was the extent of the thrombosis in the ear region. According to this we could dispense with the ligation of the jugularis in all cases where the lower thrombus end could be reached from the sinus sigmoideus. In all other cases where the thrombus was found in the bulb or jugularis it was removed before the operation on the ear or immediately after the operation. However this method gave us no satisfactory results. First of all in a great many cases we were deprived of a great many advantages which the preliminary ligation of the jugularis affords, such as avoiding the danger of crumbling and washing out of the thrombosed particles, and air aspiration. Moreover, in many cases where removal of the jugularis appeared to be superfluous at first it had to be done later. According to these experiences we must emphatically speak for the ligation of the jugularis in all cases of clinical pyæmia. We thereby do not incur any risk of unnecessarily ligating the jugularis, for the cases of established pyæmia, in which the sinuses of the ear region show organized thrombi or connective tissue obliter-

ation, indicate that there was no suppuration of the thrombus, which either healed or broke into the mastoid process after perforation of the sinus; and are to be reckoned amongst otitic pyæmia from the anatomical point of view but not from the clinical standpoint.

The opinions on the indication for the ligation of the jugularis differ in literature. Bergmann, Broca, Dalgren, Knapp, Koerner, Voss, Zaufal, approve of the obligatory ligation of the jugularis. Statistics however furnish results not altogether free of objections for we are not informed of all cases but only of such as were healed, and of cases that have come to autopsy we only know those that furnished especially important findings. This explains why, judging by the statistics in the literature, Hessler approves of the optional ligation of the jugularis, whereas Viereck approves of its obligatory ligation. Recently Macewen and Brieger favor the optional ligation, judging by their own cases. Brieger reported 26 cases at the German otological meeting in 1901. In 10 of these cases the jugularis was ligated, of which 5 cases were healed; and in 16 cases such ligation was not made, out of which 8 were healed. He comes to the conclusion that in ligating the jugularis the healing quotient of 50% cannot be raised.

Kümmel recently reported 12 cases; he favors the optional ligation. In none of the cases did he make the jugular cutaneous fistula. Out of 12 of his cases 4 died—2 of intracranial complications and 2 of metastasis. However in the latter 2 cases the meninges and the brain were no more intact and thus the two patients died of metastasis at a time when the meningitis was not fully developed. Thus the autopsy of all the 4 cases of Kümmel showed endocranial complications which developed from the pyæmia.

I shall report some figures of our own observations which I believe will fully explain the indication and the real value of the vein-ligation. Owing to the great

confidence I enjoyed from my past chief, Hofrat Politzer, I was from the very beginning of my assistantship enabled to occupy myself with the treatment of otitic pyæmia. During the course of 7 years I have made 45 ligations of the jugular vein and may divide my material into two groups. The material up to the year 1903 comprises 13 cases of optional ligation of the jugularis and primary or secondary jugular cutaneous fistula. Of these 13 cases 9 were healed, 4 died—1 of intracranial complications. From these figures we may reckon the value of the jugular cutaneous fistula. Comparing these figures with Kümmel's observations, we see that the mortality does not differ essentially. Kümmel shows a mortality of 33%, whereas I show 31%. Taking into consideration only the cases that died of intracranial complications, I having only 1 out of 4 cases, 25% died of meningitis, whereas with Kümmel it was 50%, and making it exact the autopsy of all his cases showed intracranial extension of the sinus phlebitis to be the cause of death.

In consequence of the better drainage through the jugular cutaneous fistula the danger of meningitis from otitic pyæmia was diminished.

The other group of my cases falls within the period from 1903 to 1907. This comprises 32 cases with obligatory ligation of the vein and jugular cutaneous fistula. Of these cases 25 were healed (78%), 7 died (22%)—2 of intracranial complications, *i. e.*, 29%. These figures teach that by the obligatory ligation of the veins better results in operating were secured, that is to say, 78% against 69% were healed; whereas on the other hand the quotient of the cases that died of meningitis was about the same. Our own material thus shows the justification of ligating the vena jugularis in all cases before the operation is made and thus the mortality of cases that did not die of meningitis has been again diminished. The obligatory ligation of the jugularis has thus

improved the result with respect to metastasis in such a degree that there appears or re-appears no metastasis. The better results of operation also justify the opinion that ligating the jugularis before the operation prevents distribution of the germs of infection. From these figures we may derive the real value of the entire method. We succeeded in reducing the 81% mortality of Leutert's and 42% of Körner's, from a report of 308 cases, to a mortality of 22%; and the 77% mortality of Leutert's and Körner's cases that died of meningitis or purulent encephalitis to 25 and 29% respectively.

Now to conclude. Can we expect for the near future that the mortality shall be still more reduced? This question may be answered by our figures. A further reduction of mortality of otitic pyæmia may be expected from an early diagnosis of metastasis and the possibility of an early surgical treatment. Our increased knowledge will make it possible to have the patients come in time for the operation, that is to say, before thrombosis spreads to all brain sinuses.

We, however, also see from our figures that we are now, notwithstanding our perfected operative method, and by the ligation of the veins, not able to further reduce the mortality of the cases of pyæmia complicated by meningitis. Here the chapter of healing otitic pyæmia as a topic by itself is finished and a question of the most intense interest for modern otitic surgery arises, the healing of otitic meningitis. The surgical healing of purulent meningitis has been repeatedly attempted. Though we are at present, in view of the results obtained to this time, far from a perfect operative technique, yet may we look with hope into the future. The good results in the surgical treatment of purulent meningitis will also mean a good result for the treatment of otitic pyæmia.



## REPORT OF THE TRANSACTIONS OF THE NEW YORK OTOLOGICAL SOCIETY.

THOMAS J. HARRIS, M.D., SECRETARY.

MEETING OF MAY 22, 1908. THE PRESIDENT, DR. SHEPPARD,  
PRESIDED.

Mr. ARTHUR CHEATLE of London reported a case of **chronic suppuration of the middle ear** and **mastoiditis** which **drained into the tonsil of the corresponding side**. The patient was a person of low intellect. There were no signs of labyrinthitis. There was a swelling of the parotid gland on the affected side, and examination of the throat showed a bulging of the left tonsil. There were no rigors. Two days later a facial paralysis developed. The next day Mr. Cheatle operated. An infantile antrum was found and a hole in the anterior meatal wall allowing the finger to pass to the tonsil. A sequestrum was discovered in the region of the semicircular canal. The operation was completed by carrying a grooved director to the tonsil and cutting downward. The patient made a good recovery.

Dr. JANSEN of Berlin said that he had had a similar case following an acute middle-ear suppuration, the result of grippe. The operation showed a peri-sinus abscess, a thrombus of the sinus and the jugular vein, which he had to remove entirely, and an abscess in the mouth, situated in the deepest portion of the tonsil. It was necessary, in order to reach all the disease, to resect a part of the atlas.

Dr. McKERNON reported the case of a boy of 13 upon whom an **ossiculectomy** had been performed five years before. He complained of ear discharge and sore throat. Examina-



tion showed pus coming down on the upper surface of the tonsil on the diseased side. A Stacke operation was done, and a sinus was found from the tympanum to the tonsil which was enucleated.

Dr. HASKIN quoted Dr. Holmes of Boston as reporting recently several cases where a connection between the tonsil and carious bone in the ear existed through the anterior meatal wall.

Dr. DENCH reported a case of **labyrinthitis** secondary to disease of the ear and mastoid. The patient was a man of 60 who had a profuse discharge from the ear for four weeks before the mastoid was opened. This was found broken down. The sinus was exposed and opened. The bacteriological examination showed the streptococcus capsulatus. Four weeks later vertigo, severe vomiting and nystagmus developed. The latter was on the side opposite to the lesion. Temperature of 99°. No optic neuritis. The vertigo soon stopped, but the discharge continued. The radical operation was performed. A fistula was discovered in the horizontal semicircular canal. A curette in the region of the oval window brought away a part of the promontory. The patient recovered.

*Discussion.*—Dr. JANSEN said that he had seen a similar case which had followed the grippe. Nothing was seen at the time of operation in the oval window or in the semicircular canals. There were no labyrinthine symptoms. Four days later severe nystagmus toward the opposite side developed, with vertigo. There was no fever and no headache. Two days later the nystagmus became better, but headache and fever set in. He then opened the labyrinth, which was found to contain blood. The symptoms improved for a time, but a lumbar puncture showed a serous meningitis, and the patient died. Jansen thought that this proved that it was very important to operate at once when severe labyrinthine symptoms appear, especially where an exudative process is present in the middle ear.

Dr. GRUENING said that he had operated upon 61 cases during the past winter, of whom 3 showed labyrinthine symptoms. All recovered by simple cleaning out of the antrum. He does not approve of opening the labyrinth when

labyrinthine symptoms are present in suppurative disease of the antrum.

Dr. JANSEN thought that too great emphasis could not be placed upon the prevention of fatal meningitis following disease of the labyrinth, through early operation. Many cases will not show pus in the labyrinth. To show the necessity of prompt action, he quoted two cases which he had seen.

The first case developed labyrinth symptoms four days after an acute suppuration of the middle ear. He saw the case at 10 o'clock in the evening. At that time there was no fever. Next day the temperature was 103°. He operated on the labyrinth. For a day and a half the labyrinthine symptoms were better, then the patient became worse and died. If he had operated when he first saw the case, he would have saved him.

The second case was ill three days when he saw him. For only half a day he had labyrinth symptoms. Operation the same day revealed a fistula in the external semicircular canal, a bad sign in chronic cases; death in 36 hours.

Mr. CHEATLE was of the opinion that there was a certain over-enthusiasm in operating upon the labyrinth. His feeling was that in doing the radical operation, if no disease was apparent upon the inner wall, we should do as thorough an operation as possible and then wait. Many times the labyrinth symptoms will disappear of themselves.

Dr. GRUENING said that, even where he found caries of the external horizontal canal, he performed the radical operation and his cases get well.

Dr. JANSEN said in reply that we must recognize two forms of acute labyrinthitis (a) circumscribed, (b) diffuse. The fistula in the case of Dr. Dench was due to the labyrinthitis, and represented the second form. The fistula in Dr. Gruening's case was secondary, due to cholesteatoma, and belonged to the circumscribed variety. The majority of the diffuse cases die. The circumscribed variety does not affect the meninges. The latter is one of irritability, the other that of paralysis. The heat and cold test will give the differential diagnosis. He urged that we should follow the rule and not the exception. The fatal cases are always complicated by diffuse meningitis.

Dr. PHILLIPS made a further report of the case of **carcinoma of the ear** which he presented at the January meeting, to the effect that radium had been used but with no effect except to greatly increase the pain. He also reported the case of a child of six months who had facial paralysis and an enormous cervical glandular swelling with discharging ear for four months. There were no mastoid symptoms. The glandular condition appeared tubercular. On operation the entire mastoid and petrosal portion of the temporal bone was found to be broken down and converted into an immense cavity with extension to the lateral sinus and exposure of the dura. The operation reduced the glandular swelling one third. Ten days later meningitis developed and then there was no question that the child would die.

Dr. HOPKINS reported a case of mastoiditis with anomalous course of the facial nerve, discovered at the time of the operation. When curetting the tip of the mastoid, a pinkish cord was seen coming out of just within the extreme tip of the mastoid, quite external to the digastric fossa. Further examination showed that the nerve had an oblique course. A slight paralysis resulted. As far as he knew, this was the first case to be met with on the operation table, though Berens had described a similar anomaly found in an anatomical specimen.

Dr. GRUENING reported a case of **mastoiditis with sinus and vein thrombosis and numerous metastatic abscesses**, the result of a profound streptococcus infection, where recovery took place after repeated operations. The case was that of a boy, 2 weeks ill with chills, temperature of  $107.4^{\circ}$ , and acute suppuration of both ears. There was tenderness in the neck over the course of the jugular. There was a drop of twelve degrees in the temperature. Streptococci were found in the blood. Gruening opened the sinus and the vein on the one side, which he tied, and did a simple mastoid operation on the other. Streptococci still continued in the blood. An abscess developed in the thigh, followed by abscesses in the arms and perineum, all of which were opened. For the first time after the last operation, the temperature fell and the streptococci disappeared from the blood. The boy was discharged seven weeks afterward, cured. Dr. Gruening added

that all the coats of the vein were thickened down to the clavicle, and the walls diseased to that extent but not beyond.

Dr. JANSEN spoke of a case of **carcinoma of the labyrinth**. At the time of the operation the labyrinth was not opened on account of the condition of the patient. The diseased glands of the neck were removed and a suspicious appearance found in the region of the oval window. The post mortem confirmed his diagnosis.

A second case, where the character of the granulations in the ear led him to make a clinical diagnosis of carcinoma, was not operated upon because the microscopic report did not confirm this diagnosis. Some months later a large carcinoma developed. The case made him feel that we should not depend upon the microscopic findings but upon our clinical picture.

Dr. HASKIN referred to three cases of carcinoma where the pathologic examination was negative.

Dr. WHITING said that he had seen three cases of carcinoma of the middle ear. One case showed an apparently simple polyp in the ear. There was, however, an unusual degree of pain complained of. The polyp was removed, but was rapidly replaced by granulations, which grew to enormous size. At the patient's earnest request, these were removed after first tying off the common carotid. In spite of this the hemorrhage was so severe as to demand the use of the Paquelin cautery. Ten days later he died.

Dr. WHITING had seen two cases where the auricle alone was involved. X-ray in his hands did no good. He had got the best results from the use of Labarraque's solution and calomel.

Dr. LUTZ said that he had seen almost an identical condition in a case of sarcoma of the spindle-cell variety. This began also as a polyp. There was intense pain. Three operations were performed, with rapid return of the growth.

Dr. BACON reported a case of double mastoiditis with unusual symptoms. The patient was a boy who had suffered from double otitis media on both sides, for which he had opened the drums. The boy did well for a week although he kept him in bed and the ear continued to discharge. Suddenly the eyelids began to swell and acute nephritis developed, with

three per cent. of albumen. It was a question whether a mild scarlet fever or the grippe was the cause. The ear still continued to improve till five days ago, when he had a chill, with tenderness over each mastoid. There was also a high leucocytosis. At the onset of the sickness he had mastoid symptoms, but these had quickly subsided. The next day he operated and found a diploic mastoid on both sides. On account of the chill, Bacon opened the sinus on the most affected side and found a poor return of blood. The curette was introduced towards the bulb, when a free flow of blood was established. The temperature fell to normal, but for a day or so the albumen increased to 10%. Nothing was found in the blood.

Dr. BRYANT related the history of a case of **meningeal hernia**. A patient had had five operations upon the ears for double mastoiditis. When he saw the case there was what appeared to be an aural polyp in one of the canals. The radical operation was done, and revealed that the polyp was in reality a meningeal hernia, in front of which there was a fistula opening into a small cerebral abscess of the temporo-sphenoidal lobe. A second operation was performed to increase the drainage through incision of the dura. All went well till a nurse cut the bandage, allowing a cerebral hernia to protrude. This could not be reduced, and gradually increased to the size of an egg. It was cut off, causing profuse flow of cerebro-spinal fluid, which finally ceased and the wound healed completely.



REPORT OF THE TRANSACTIONS OF THE  
CHICAGO LARYNGOLOGICAL AND OTO-  
LOGICAL SOCIETY.

BY DR. GEORGE E. SHAMBAUGH, SECRETARY.

MEETING OF MARCH 10, 1908. PRESIDENT A. H. ANDREWS  
OCCUPIED THE CHAIR.

Dr. Jos. BECK presented a child who had suffered from a **laryngeal obstruction** since birth. A soft yielding tumor was found in the region of the epiglottis by palpation. Laryngoscopic examination was impossible. Tracheotomy was performed to relieve the respiratory symptoms. Upon incision a grayish gelatinous substance was evacuated from the tumor.

Dr. Beck presented a patient where the typical symptoms of **sinus thrombosis** had been found, where the leucocyte count reached 40,000, and the jugular vein was found thrombosed down as far as the thyroid cartilage. After cleaning out the lateral sinus, and operating upon the jugular vein the bulb of the jugular was laid open according to the Alexander method. The result was entirely satisfactory.

In discussing Dr. BECK's case of thrombosis Dr. SHAMBAUGH stated that these cases of jugular bulb involvement present one of the most difficult problems in connection with aural surgery. In the first place, it is not always an easy matter to determine in just what cases we are justified in operating upon the bulb of the jugular, and in the second place, the operation itself is a difficult and in some respects a serious one. The anatomical variations in the size of the jugular bulb are so marked that, whereas the cleaning out of the bulb may be a very simple matter in some cases, in others



a complete laying open of the jugular bulb may be an operation so extensive as to engender not only the facial nerve but the posterior semicircular canal. For this reason we should be very careful that we do not undertake the cleaning out of the jugular bulb unnecessarily. Not every case where the jugular bulb is found thrombosed requires a laying open of the bulb before recovery can take place. If the thrombus is not infected the patient is better off with the thrombus in place. The difficulty, of course, is in determining in what cases the thrombus is infected, and in what cases it is not infected. If at the time of the operation upon the lateral sinus a broken down foul-smelling discharge comes from the region of the bulb, then we should proceed at once with the operation of laying open the jugular bulb. If, on the other hand, there is a firm thrombus in the bulb with no appearances of infection, he believes that the logical treatment, in view of the serious nature of the operation upon the bulb, is to treat the case as though it were a non-infected thrombus. In case subsequent symptoms indicate that the thrombus in the bulb is an infected one, under these circumstances we are justified again in cleaning out the jugular bulb. The operation that seems to make it possible always to reach the bulb and effect its exposure is that of chiselling away the portion of the temporal bone lying along the anterior margin of the extension of the lateral sinus forward toward the bulb. The two dangers in this operation are, that of injuring the posterior semicircular canal in case the chiselling is carried too high up along the posterior surface of the petrous portion of the temporal bone, and in the second place, that of cutting off the facial nerve in case too thick a piece of bone is taken off in front of the sinus.

Dr. FRANK ALLPORT believes that if a thrombus is found extending backwards toward the torcula, it is usually a non-infected thrombus, and for this reason can be left alone. If the thrombus extends forward in the course of the circulation of the lateral sinus it is more likely to be infected, and for this reason it should invariably be removed if possible. He is not in favor of the radical exposure of the bulb of the jugular, but believes that after exposure of the jugular vein the condition in the bulb can be sufficiently relieved by

extending a long narrow curette high up in the jugular vein toward the bulb.

Dr. A. H. ANDREWS doubts the necessity, in most of the cases of involvement of the jugular bulb, of the radical exposure of this region. He recalls a number of cases where, after cleaning out the lateral sinus and the ligation of the jugular vein the patient made a good recovery without molesting the condition of the jugular bulb.

Dr. NORVAL H. PIERCE has operated upon a number of cases of thrombosis of the jugular bulb. He considers the exposure of the jugular bulb in cases where this is thrombosed as the logical surgical procedure, and believes the patient is better off with the bulb thoroughly cleaned out than with a thrombus allowed to remain. He recalls a case where the fourth day after operation upon the sinus the patient succumbed to a thrombus extending to the cavernous sinus which he believes was due to an extension from the thrombus in the region of the bulb. He thinks the difficulties of the operation vary with the case, and that in the majority of cases a thorough drainage can be accomplished without much risk to the patient. While the Alexander method of exposing the sinus is perhaps the easier and safer method, he thinks the Grunert method is the best.

Dr. BECK said he did not believe in leaving an infected area anywhere in the field of operation, especially when it can be reached. An attempt should be made at least to remove it. In cleaning out the sinus free bleeding should be obtained behind as well as below, then only you may be sure that the thrombus has been removed. While the drainage and puncture of the bulb of the jugular can sometimes be accomplished through the floor of the tympanum, he does not believe this is a method that can be advised as a routine one.

Dr. OTTO T. FREER presented a patient with **tabic laryngeal crises** and paresis of the abductors of the vocal cords, also due to tabes. His report was supplemented by Dr. STANTON R. FRIEDBERG, who had observed the patient in his service at Cook County Hospital. The attacks of crises varied in frequency from several times a day to once in a few days, and were usually introduced by an aura consisting of ab-

normal sensations and tickling in the throat. The aura was followed by spasmodic closure of the glottis and a suffocative spell which completely shut off the patient's breath and voice for a period of from  $\frac{1}{2}$  to  $\frac{3}{4}$  of a minute. The spasm of the glottis then relaxed enough to permit labored breathing with stridor, the onset terminating in a coughing spell. Physical examination by the neurologist, Dr. William Healy, showed enough of the signs of tabes to prove its existence beyond doubt, inco-ordination of both upper and lower extremities, Argyll-Robertson pupil, Romberg's symptom, and other positive signs being present.

Laryngeal inspection showed permanent partial adduction of the cords, which did not move outward even during deep inspiration. During quiet breathing they remained abnormally approximated. These conditions were regarded as due to paralysis of the crico-arytænoidei postici muscles.

Dr. Freer, in his comments referred to Sir Felix Semon's classic section on nervous diseases of the larynx in Heymann's *Handbuch der Laryngology* and the great influence it had had in stimulating research in the neurology of the larynx. He regretted that no English version of this superb work of Semon existed. The history of the patient was compared with Semon's description of the crises of tabes and found to be in accord with it, including the paralytic state of the abductors of the cords mentioned by Semon as frequent accompaniments of tabic laryngeal crises.

Dr. Freer referred to the prevailing impression, gained from the brief articles of text-books, that paralysis of the crico-arytænoideus posticus muscle is immediately followed by permanent adduction of the cord to the median line—that is, the centre of the glottis. He explained that this impression is incorrect and that the only evidence of posticus paralysis, especially in tabes, for a long time may be a slowly developing loss of the faculty of abduction of the cord into the inspiratory position, coinciding with the gradual loss of power of the abductor muscle to complete paralysis. Only later, as spastic contracture of the unantagonized adductors develops, is the cord gradually drawn towards the median line, which may never be reached by it, in so slowly progressing an affection as tabes, before the patient dies.

Semon's law, that in gradually progressing paralysis of the recurrent laryngeal nerve, whether of nuclear or peripheral origin, the abductor muscle, the crico-arytænoideus posticus, becomes powerless before the adductors of the cord succumb, was mentioned by Dr. Freer as so completely sustained by long observation that it may be regarded, as Kuttner states, as axiomatic, for all attempts to disprove it in the past twenty-five years have failed.

Remarkable features in the case presented were the occurrence of pain in the larynx and also in the region of the heart during the spells and the occurrence of a period of gastric crises with vomiting which preceded the laryngeal ones, the gastric crises ceasing before the laryngeal ones appeared.

Dr. Friedberg, examining the patient laryngoscopically during a crisis found spasmodic adduction of the cords.

In discussing this case Dr. HEALY said the case illustrates that tabes is not only a sensory disease but partakes also of motor qualities. This was the first well-marked case of laryngeal crises that he had seen in a study of some two hundred cases. Of the two hundred and seventy cases recorded in medical literature 40% presented laryngeal crises. Some observers had seen as high as 10% of the cases of tabes presenting symptoms of laryngeal crises, while others had seen but 2%.

The frequency of paralysis of intrinsic muscles of the larynx varies from 14% to 26%. The abductors are nearly always affected first. This condition may appear very early as preataxic.

Semon saw a case in which for two years it was the only symptom of tabes. It may not appear until the last stage, and then in connection with gastric crises.

Oppenheim found that pressing on the sides of the hyoid bone frequently brought on an attack of laryngeal crises in a patient who is subject to it. Most authorities maintain that practically always the nucleus ambiguus is affected. Others, however, found the lesion in the root fibres running up through the medulla or in the vagus itself. The prognosis of this symptom is very bad; it may necessitate an operation.

Semon points out, however, that as time goes on paralysis of the adductors takes place, and the patient is then relieved

of all further trouble. He also points out that an operation in such cases is rather dangerous on account of the trophic disturbances which frequently take place in tabes, and he has seen sloughing and failure of the wound to heal after tracheotomy. The treatment usually recommended is painting the larynx with a strong solution of cocain, and giving bromides and codein internally.

Dr. HOLINGER remarked that some authorities claim that the treatment of syphilis is responsible for tabes. He asked whether there was a history of syphilis in this case, and what treatment, if any, had been carried out. Dr. FREER replied that there was no history of syphilis, and a careful examination failed to reveal any evidence of this disease. He pointed out that the laryngologists may be called upon to discover nervous diseases through evidences in the larynx, and called attention to the important work on the innervation of the larynx that had been done by the German investigators.

Dr. H. KAHN read a paper on the **subjective sensations of smell and their significance**. He presented the views of the various rhinologists who had written on this subject, and discussed the various theories causing subjective sensations of smell. He concluded his paper by reporting a number of cases that had come under his observation, and where, in spite of the absence of any other symptoms of nasal diseases, he had found upon puncturing the antrum a chronic latent empyema with a secretion having the same character of odor as that from which the patient complained.

Dr. BALLENGER raised the question whether these cases where an organic basis for the subjective sensations of smell is found, such as chronic empyema of the antrum, should be classified as a case of parosmia.

Dr. HOLINGER called attention to the fact that not all cases of parosmia have an organic basis. It is not an unusual symptom of coryza. If in such cases the sinuses were carefully examined, possibly the cause for the parosmia in these cases could be discovered.

Dr. HEALY said that since the work of Jackson on the uncinate gyrus the neurologists had paid more or less attention to the sensation of smell. An important point is its relation to epilepsy. There has been described a class of



fits, so-called uncinate fits, in which the aura has been that of subjective sensations of smell. It is believed now that many of the so-called hysterical symptoms of parosmia may be due to the irritation of the uncinate gyrus. One of his patients (a hysteric young girl) believes she has an odor emanating from the body. She has ideas of persecution, which make up a nice picture of paranoia. She has been given careful treatment, and it seems possible that there may be some organic disease, such as Dr. Kahn had found in his case, since she had not been relieved by other treatment.

Dr. KAHN said he had given only a clinical classification in his paper. These are subjective symptoms, and in case an objective cause is found it becomes an objective symptom. A classification of true and pseudo-parosmia could be made, the true parosmia being purely of nervous origin with no definite organic change. As far as the accessory sinuses are concerned, it is pretty well known that parosmia is found only in diseases of the ethmoidal sinuses and in diseases of the antrum, the sphenoidal and frontal sinus not causing this symptom.

Dr. STUBBS presented a **perfected Gottstein curette**, and described in detail the technique of the removal of adenoids by means of such a curette. The cutting should be in a horizontal plane from before backwards, and when one reaches the posterior wall of the pharynx the curette should be so tilted and brought forward as not to scrape the posterior wall of the pharynx. The knife of the curette is so placed that it will cut in a horizontal plane when carefully introduced.

Dr. Stubbs states that the pharyngeal tonsil has a definite limited location, and that it does not comprise the lymphoid tissue which is found in other parts of the naso-pharynx—for instance, in the fossa Rosenmueller. A proper-sized curette, if manipulated properly, will remove in one incision the pharyngeal tonsil in its entirety.

Dr. PYNCHON, in discussing the curette presented by Dr. Stubbs, stated that he endorses the angle of the cutting blade. It is the only one that will curette the entire wall. His only criticism was that the blade was in a straight line. The pharyngeal vault is high arched, and cutting a straight line across it does not enable us to touch all of the surface. The

blade should also be rounded. He has a curette which is curved and has side-cutting blades, so that the fossa of Rosenmueller can be curetted.

Dr. BALLENGER called attention to the anatomic variations in the formation of the pharyngeal vault, and to the fact that not many curettes will meet all these conditions and still remove the adenoid tissue. He thinks Dr. Stubbs's curette is one of the best. He thinks the curette designed by Dr. Pyncheon, with a backward sweep of the blade, would be successful where Dr. Stubbs's would fail.

Dr. GRADLE thinks the curette is correctly designed, and that it is applicable to the slight variations of the pharynx met with in practice, and that with moderate skill and some practice the mass can be brought out in one piece with one sweep. It presupposes, however, some practice and skill. For this reason Dr. Gradle has designed the automatic guillotine or curette. It is similar in curve and form to Dr. Stubbs's curette. The knife of the guillotine does break once in a while but only in one place. All that is necessary, however, is to put in a new knife. The particular advantage of the guillotine is that it adapts itself automatically to the shape of the pharynx, and if the operator remembers to push it upwards firm enough he cannot fail to bring out the mass even with very little skill. With the exercise of more skill he believes Dr. Stubbs's curette will accomplish the same purpose as thoroughly and as satisfactorily.

Dr. JOSEPH BECK stated that he had used the curette devised by Dr. Barnhill, and had experienced no trouble in getting out the adenoids in one mass. He thought one might have trouble with Dr. Stubbs's curette in cases where there is a deformity of the wall of the pharynx, as a protrusion of the atlas. Extreme care would have to be used in making the forward and upward sweep, the last step in removing the curette, so as not to cut the mucous membrane. The greatest trouble the average practitioner has is in making the sweep downwards. He has modified Dr. Gradle's guillotine by making the blade work upwards, thus preventing the possibility of breakage. He uses a solid blade devised by Laforce, and it does the work very nicely.

Dr. STUBBS (in closing) states that he had made the knife

of his curette straight instead of curved purposely after making a careful study of the pharynx on the cadaver. He does not claim that his curette will fit every case, but he does believe that the vast majority of cases are suitable for his curette. The particular thing is to get the adenoid mass out in one piece. The supporting pillars in the curette devised by Dr. Barnhill do not resist as much, and prevent coming in flush with the upper angle, preventing satisfactory removal of the adenoids. He has also flattened his knife more than is done in Dr. Barnhill's curette, and also made the knife straight in front.

MEETING HELD APRIL 14, 1908. PRESIDENT A. H. ANDREWS  
IN THE CHAIR.

Dr. JOHN EDWIN RHODES exhibited a patient suffering from an unusual condition of **xanthoma** occurring in a boy twenty-three years of age. The lesions were widely distributed over the body, particularly the genitalia, chest, shoulders, eyelids, and in throat and larynx. Respiration was interfered with to such an extent that a tracheotomy had to be done about two years ago. Improvement followed immediately, and the patient is now able to speak well and the nodules elsewhere are gradually lessening in size.

Dr. GEO. E. SHAMBAUGH exhibited a case of **tubercular laryngitis** in a man fifty years of age. Symptoms of hoarseness began about a year ago, and at no time until within a few weeks has he suffered from any other symptoms. Recently there has been some slight pain on swallowing. No evidences of tuberculosis were found in any other part of the body. The condition was one involving only the right side of the larynx. There was extensive nodular infiltration with ulcerations occupying the false cord and extending to the arytenoid cartilage on the right side only. There was very little reaction about the lesion, such as oedema and redness. The vocal cord is freely movable and is apparently not involved. The microscopic sections made from tissue removed from his throat were exhibited, showing typical tuberculous infiltration with numerous giant cells.

Dr. NORVAL H. PIERCE reported a case of chronic suppurative otitis media with **thrombosis** of the **lateral sinus** and

jugular bulb, erosion of facial canal, and cerebellar abscess on which he had operated, the patient recovering. The case was a man, thirty years of age, who had suppurative otitis media for two years. He came complaining of pain about the right ear and vertigo of ten days' duration. Shortly after the onset of vertigo he had frequently repeated chills, with temperature ranging from normal to 105° F. and at this time the facial nerve became involved. The dizziness increased so the patient was unable to lift his head. The nystagmus was very marked on turning the eyes to the opposite side. The membrana tympani showed a small perforation with a foul smelling discharge. The radical operation was performed for the exenteration of the mastoid and tympanum. The antrum was found filled with pus and cholesteatoma. The head of the malleus was necrotic. The critical condition of the patient prevented any further exploration at this time. Subsequently the patient was again anæsthetized, the lateral sinus was cleaned out, and the jugular vein and bulb were resected, and a cerebellar abscess drained. Patient has made a good recovery.

In discussing this case Dr. BECK pointed out two interesting features of the case: first, the presence of a cerebellar abscess without marked symptoms, and second, the occurrence of the chills and temperature curve. He had recently operated upon a case where a diagnosis of labyrinthine disease had been made from the symptoms of nystagmus and staggering gait. On opening the labyrinth it had been found unaffected, but there was found an abscess about the lateral sinus which caused compression of the cerebellum. When this was relieved the symptoms disappeared. He inquires whether the symptoms of nystagmus in Dr. Pierce's case might not be explained on the basis of the cerebellar abscess. He lays great stress on the occurrence of a chill in suppurative ear disease as indicative of sinus trouble. He has operated recently on several cases with gas oxygen anæsthesia, to his entire satisfaction. He claims there is no danger of collapse or prostration, which occurred in this case under another anæsthetic. He inquired of Dr. Pierce whether the facial paralysis cleared up.

Dr. FRANK ALLPORT considers the occurrence of laby-

rinthine involvement as an indication that there will probably be intracranial involvement as well. In cases where the diagnosis is doubtful he finds considerable assistance in making a blood examination, both the bacteriological examination and a careful examination of the leucocyte-count. He believes that in such cases one should always aim in making a full exposure of the sinus. He does not think it possible in all cases to make a positive diagnosis before operating. He mentioned a case he had seen recently where the symptoms had been slight, and yet he had been led to operate upon both mastoids and in both there was serious involvement, and later the sinus was found to be involved. The symptoms are not always clear cut and well defined.

Dr. GEO. E. SHAMBAUGH called attention to the fact that the nystagmus and ataxia which occur in cases of cerebellar abscess are not unlike the same symptoms arising from a pus infection in the labyrinth. The cerebellar abscess of otic origin arises usually from an extension through an involved lateral sinus, or by way of the labyrinth. If the cerebellar abscess follows secondarily upon suppuration of the internal ear, one may be able to diagnose the occurrence of a cerebellar abscess by finding a complete destruction of hearing and an absence of increase in nystagmus and vertigo by the Barany method of syringing the external canal with hot and cold water.

Dr. PIERCE (in closing) states that the nystagmus disappeared after the operation, and the facial paralysis has also largely disappeared. As his experience increases he has come more and more to attach less importance to the value of the blood count. In positive cases we do not have to make it, and in the doubtful cases it is too uncertain to be relied upon.

Dr. GRADLE exhibited a specimen of **calculus** removed from the **duct** of the **submaxillary gland**. He also reported four cases of periauricular abscess and furunculosis of the canal, in which the symptoms very closely simulated those of a mastoid abscess. He called attention to a number of points in the differential diagnosis and concludes that the periauricular abscess has not received as much attention as its importance deserves.



Dr. HOLINGER thinks the differential diagnosis is not always easy even for the experienced ear surgeon.

Dr. PIERCE was inclined to believe that the differential diagnosis between the two conditions was not such a difficult matter, and that it could be based usually upon the character of the infiltration. In furunculosis and periauricular abscess from other causes than mastoiditis, he believes the presence of œdema and pitting will always be found, whereas, if the condition is one of mastoiditis, these symptoms are largely absent in spite of the infiltration over the mastoid.

Dr. FREER referred to a case in his experience where periauricular swelling was due to a closure of Steno's duct. The case had been diagnosed as one of necrotic bone, but upon removal of a fish bone from the duct the symptoms subsided.

Dr. ALLPORT was inclined to agree with Dr. Pierce in thinking the differential diagnosis is usually an easy question, yet in the atypical cases any surgeon will often be puzzled.

Dr. BECK recommends the X-ray in determining the condition of the mastoid, and thinks its use will soon become universal.

Dr. ANDREWS finds the transilluminator a valuable aid in these conditions. In mastoid abscess the light is obscured, while in periauricular abscess the passage of light is not interfered with, at least until there is external evidence of pus.

Dr. GRADLE (in closing) said that the point made by Dr. Pierce in the differential diagnosis applies to many cases, but what he wished to point out in reporting these cases was that there are exceptions that are very puzzling for the time being, especially when there is no swelling with existing pain and tenderness. In one of the cases he reported he would have preferred to operate, but the patient was unwilling.

Dr. FRANK BRAWLEY reported a case of **headache** which he believed to be due to **non-suppurative frontal sinusitis**. He referred to two previous papers upon the same subject which he had published. The present case was, he thought, an exceptional one. He believes this condition may occur in an apparently normal nose and may be due to closure of the naso-frontal duct by turgescence of the middle turbinated body, which occurs during damp, cold weather, with head

colds, and during the menstrual period, etc. The pain is caused by irritation of the fibres of the anterior nasal nerves in the frontal sinus, due to the swelling of the lining membrane of the sinus. This swelling results from the vacuum formed in the sinus by the absorption of the oxygen from the imprisoned air. The treatment is resection of the anterior third of the middle turbinated body. In the present case this did not suffice, and the naso-frontal duct was cauterized with trichloroacetic acid and chromic acid, which destroyed part of the oedematous lining membrane, and caused the remainder to adhere closely to the bony canal by adhesive inflammation. The symptoms have been entirely relieved.

Dr. PIERCE questioned the advisability of cauterizing the naso-frontal duct, fearing the ultimate result of the cauterization would be to lessen the lumen of the duct by cicatricial contraction.

Dr. BRAWLEY (in closing) replied that there is no danger of cicatricial closure, as cauterization makes the soft tissue adhere more closely to the bony walls, thereby increasing the lumen, and pointed out the use of caustics in the dilation of the lachrymal duct.

Dr. L. N. GROSVENOR reported a case of **chondroma** and **osteoma** in the faucial tonsils. The condition occurred in a woman twenty-seven years of age where there was an apparent stiffening from ossification of the soft palate, so there was a marked speech defect. The finding of cartilage and bone in the tonsils has been reported a number of times, the writers usually referring the condition to an elongation of the tip of the styloid process. Others writing on the subject have attributed the finding of osseous tissue in the tonsil as due to metaplastic changes. Others conclude that the abnormal growth of cartilaginous structure in the tonsils occurs from a remnant of the second branchial arch. In drawing conclusions from the study of his case Dr. Grosvenor believes the cartilage and bone are not part of the styloid process, for he was unable to palpate the stump. Again, the condition occurred in the form of a ring or triangle rather than in a single nodule. He does not believe the condition is one of metaplastic changes, for there was no clinical history or pathological finding that would justify such a claim. He believes the

logical conclusion is that the cartilage and bone found in these tonsils was developed from a matrix of unused or displaced embryonic cells derived from the second branchial arch.

Dr. GROSVENOR exhibited a series of sections of the tonsils, which were thrown on the screen by means of a lantern.

Dr. HOLINGER exhibited a series of sections of pathological conditions of the labyrinth.

Dr. BOOT exhibited sections showing the development of the nasal cavities in a human embryo.

Dr. FREER exhibited sections of primary tuberculosis of the nose.

Dr. OSTROM exhibited sections of sarcoma of the faucial tonsil.

Dr. SHAMBAUGH exhibited sections of the normal organ of Corti and of the crista ampullaris.

MEETING OF MAY 12, 1908. THE PRESIDENT, DOCTOR A.

H. ANDREWS, PRESIDED.

**Maxillary cysts of dental origin with report of a case.** By Dr. NORVAL H. PIERCE.

Dr. Pierce presented drawings showing a large maxillary cyst, which he had removed intact. The cyst contained clear fluid, and had its origin from the root of a molar tooth. Dr. Pierce discussed in detail the differential diagnosis between maxillary cyst of dental origin and disease of the maxillary sinus.

Dr. JOSEPH C. BECK reported a case of **dentigerous cyst** of the follicular type. The patient had presented symptoms of antrum trouble for several months. No evidence of nasal trouble. There was extreme tenderness over the antrum and alveolar process. Two teeth were missing. A radiograph showed the teeth misplaced in the jaw. The opening into the cyst was made over the swelling in the roof of the mouth. The cavity of the cyst was filled with grumous fluid. The teeth were removed, and the cavity packed, but it did not heal. Later the walls of the cavity were scraped and were lined with a flap taken from the gum. This resulted finally in healing. The patient has had no trouble since, and wears a plate to supply the missing teeth.

Dr. Beck also called attention to a method of obliteration of the antral cavity in empyema by means of the injection of bismuth paraffin paste as advocated by Dr. Emil Beck.

Dr. GEORGE E. SHAMBAUGH emphasized the significance of the bulging of the external wall of the antrum in cases of maxillary cyst. The older writers on disease of the maxillary sinus refer to an ectasia of the facial wall as one of the characteristic signs of empyema of this sinus. It became known later that cases presenting such an ectasia were not cases of true empyema, because on puncture a clear fluid was found. These cases were still considered as cases of antrum disease, and were referred to in the literature as cases of "hydrops antri." We now know that the so-called cases of hydrops antri were invariably cases of maxillary or dental cysts, which had developed at the expense of the cavity of the antrum, and produced as well a bulging of the facial wall of the antrum. Disease of the maxillary sinus does not produce a bulging of the facial wall. The most characteristic symptom of maxillary cyst is ectasia of the facial wall of the antrum.

Dr. J. HOLINGER said he differed with the statement made by Dr. Shambaugh that disease of the maxillary sinus does not produce bulging of the facial wall. Only the day before he had operated on a patient who had a distinct bulging of the facial wall of the antrum, and on opening the maxillary sinus he found a tumor. It proved to be a case of simple granuloma. The patient stated that her face had been swollen as long as she could remember, but she had not experienced any annoyance. A photograph made forty years before showed this swelling. He called the attention of the Society to a boy he had shown several years ago in whom there was an abscess of the septum of the nose, and where a misplaced tooth appeared later to be the cause of the trouble. The ulceration of the septum was so extensive in this case, that as the child develops there has begun to appear a depression of the bridge of the nose. There is now a membranous septum, but no cartilage.

Dr. SHAMBAUGH replied that he did not intend to give the impression that in all cases where there is a bulging of the interior wall of the maxillary sinus a dental cyst would be

found. What he meant to say was that no case of empyema of the maxillary sinus was known to produce ectasia of the interior wall. Of course such an ectasia may be caused by a tumor of the maxillary sinus.

Dr. NORVAL H. PIERCE (in closing the discussion) emphasized the fact that dilatation of the antrum is one of the usual symptoms of tumor of the sinus, and that a swelling of the face over the antrum in empyema of this cavity may take place when an osteomyelitis is set up, but this is not in the nature of a true ectasia. In such a disease of the maxillary sinus the symptoms are so distinctive that the possibility of confusing this condition with that of a dental cyst is hardly possible.

**Non-suppurative labyrinthine disease occurring in the course of mumps.** By Dr. G. W. BOOT.

Dr. Boot had made a study of the literature of such involvements of the labyrinth following mumps. He finds this is not an uncommon complication in mumps, and from the study of the symptoms which have been reported in the various cases he finds that there are three distinct types of labyrinthine involvement. First, those cases where the cochlea alone appears to be involved, second, those in which the vestibular apparatus and semicircular canals alone are involved, and third, those cases in which the entire internal ear shows marked symptoms of involvement. Dr. Boot reports two cases, one from the dispensary at Rush Medical College, the history of the other given him by Dr. Shambaugh. He concludes that the pathological changes that take place in the labyrinth of the ear are of an inflammatory character, which stop short of being severe enough to produce a pus infection.

Dr. KAHN thinks that if one wishes to have a correct idea of the extent of involvement of the internal ear following mumps it is necessary that one has made an examination of the hearing previous to the attack. Some of the cases collected by Dr. Boot from the literature are quite incomplete in that no tests had been made for the higher tones, and no record of the presence or absence of nystagmus. He questions the classification as given by Dr. Boot, and states it is his impression that when the semicircular canals are



involved there is invariably a complete loss of hearing from involvement of the cochlea, whereas when the pathological changes take place in the cochlea there need not necessarily be an associated involvement of the semicircular canals.

Dr. SHAMBAUGH thinks that the classification given by Dr. Boot of the three types of labyrinthine involvement based upon the areas of the labyrinth which have been affected as shown from the symptoms of deafness and vertigo is very suggestive. Dr. Boot is inclined to think that the condition is one of mild infection and inflammation. One would naturally expect that an inflammation involving the labyrinth which is extensive enough to produce complete destruction of the function of hearing would also extend and involve the vestibular apparatus and vice versa. The fact that separate and distinct areas of the internal ear are apparently involved in this way following mumps suggests the probability that a process like embolism may be at the bottom of the trouble. It is well known that the arterial supply of the labyrinth comes through a single vessel. An embolus lodging in the labyrinthine artery would produce sudden and general disturbance of the internal ear, since there is no collateral circulation of any importance between the blood-vessels in the labyrinth and those in the surrounding structures. We also know that the branches of the labyrinthine artery that go to supply the vestibule and semicircular canals are quite distinct from those that go to supply the cochlea. Each of these vessels is of the type of end arteries, so that an embolus lodging in any one of them will shut off completely the blood supply for a certain part of the labyrinth. The areas in the labyrinth that are in this way isolated by their arterial supply are, first, the macula acoustica utriculi, together with the ampullæ of the superior and horizontal semicircular canals, second, the ampulla of the posterior semicircular canal, third, the macula acoustica sacculi, and fourth, the cochlea itself. It is plain to see from such a distribution of the arterial supply of the labyrinth how it is possible for such a process as embolism to involve certain and distinct parts of the labyrinth.

Dr. ANDREWS called attention to a case he had examined

where there was deafness in both ears following mumps. A diagnosis of hysterical deafness had been made. After examining the patient he expressed the opinion that it was a condition of labyrinthine involvement due to mumps, and that the prognosis was unfavorable. The patient passed from under his observation, and he cannot make a further report.

Dr. BOOT (in closing), replying to Dr. Kahn, said the patient he examined was totally deaf for the Galton whistle. An examination for nystagmus was made, but it was not apparent without special search, and he does not see any objection to classifying cases according to their symptoms, whether they have disturbed the function of hearing or the function of equilibrium. Most of the cases show an involvement of both the cochlea and the vestibular apparatus, while a few of them show a decided separate involvement. He thinks it probable that the complication of the labyrinth following mumps is much more common than is generally believed. There have not been very many cases reported in the literature.

**Case of spontaneous tympano-mastoid exenteration, the result of suppurative otitis media.** Dr. A. H. ANDREWS.

Dr. Andrews reported two such cases, and discussed in full the subject of spontaneous exenteration of the mastoid.

Dr. HOLINGER thinks there are two conditions that must be considered in this connection. One is a pressure atrophy of the upper posterior wall of the external meatus, the result of a cholesteatoma of the external canal. The second is a process of necrosis. He called attention to a case of this kind which he had reported some years previously, which he had found in examination of the inmates of the deaf-mute asylum in Jacksonville. In this case there was no facial paralysis, but the whole mastoid process was excavated, opened into the external canal, and was lined with the cholesteatomatous membrane. The centre of the cholesteatoma contained a small nodule of bone sequestrum.

Dr. C. M. ROBERTSON stated that in a case he had examined the posterior upper wall was found to be bulging, and on probing in this region the instrument slipped into a cavity that extended into the mastoid and into the internal ear. He thinks that usually a case of this kind is the result

of sequestrum. He thinks this condition is not at all uncommon in tuberculous patients. A cholesteatoma is well known to produce a result of this kind. He has the impression that a number of cases of this kind have been reported involving not only the mastoid but the internal ear.

Dr. PIERCE has seen but one case of this kind, occurring in a man over forty years old. He was referred to him by an insurance company for examination. There was a history of long-standing discharge from the ear of uncertain origin. The ear had been dry for some years, however, before Dr. Pierce examined him. On examination there was every evidence of a typical radical mastoid. The outer wall of the attic was gone, and there was a large opening where the attic had been about the size of a filbert. There was a strand of connective tissue running from the roof of the attic to the facial canal. The whole was covered with a cholesteatomatous membrane, dry, glistening, partially clear, and the hearing in the ear was exceptionally good.

Dr. J. C. BECK stated that Dr. Dench had shown a case where an exfoliation of the cochlea had taken place, and where after healing tests seemed to show that the patient could still hear in that ear. Dr. Beck thinks this may indicate that there was some remnant of the cochlea left in which the hearing was preserved.

Dr. A. H. ANDREWS (in closing the discussion) said that in his cases the ear was suppurating, the bone conduction was much reduced, and the hearing was so bad that he had to use a tube. In testing with the speaking tube he could not discover that the patient heard better in one ear than the other. In his experience the tuberculous cases resulted in destruction of bone in the form of a large sequestrum. In both of the cases which he reported at this time there had been no sequestrum. He does not believe it could be said from the history or the present condition that it was a cholesteatomatous process. He has two specimens of exfoliated labyrinths which he removed during mastoid operations. In the cases reported the result is so much like the result of a radical mastoid operation that with the exception of the small meatus he would be glad to exhibit the case as evidence of his skill as an operator.

**Differential diagnosis between involvement of the labyrinth and hysteria in a case of double suppurative otitis media. Dr.**

**J. HOLINGER.**

Dr. Holinger reported several such cases, and discussed at length the tuning-fork findings, illustrating the important points in the differential diagnosis between involvement of the labyrinth and hysterical deafness.

Dr. NORVAL H. PIERCE thinks that probably the majority of cases of acute otitis media of severe type are complicated by some involvement of the internal ear. This is shown by the fact that in these cases the perception for the higher tones is very much reduced for a long time, and often permanently. He has recently re-examined several cases which returned to him after ten or twelve years. The cases had suffered from severe suppurative inflammation of the middle ear. The conditions had healed up, however, and he is now able to demonstrate marked nerve deafness. Such cases are not necessarily the result of suppurative changes in the labyrinth. Dr. Pierce thinks it is more probably a plastic process, and thinks it rather remarkable, in view of the intimate anatomical relation existing between the tympanum and the labyrinth, affording easy access for micro-organisms or their ptomains, that involvement of the internal ear is not more common than it really is. He asked Dr. Holinger about the temperature in one of the cases he described. It has been stated that in suppuration which is confined to the labyrinth there is no elevation of temperature. Such a statement appears rather surprising, yet, coming from such a man as Bezold, it is of considerable importance.

Dr. H. KAHN said the differential diagnosis between hysteria and internal ear trouble was of great interest to him. He found in looking through the literature that there was a general agreement that hysterical involvement of the ear may give tuning-fork tests, which, if taken by themselves, would point towards labyrinthine disease. Hammerschlag has pointed out that in labyrinthine disease of hysterical origin tinnitus and vertigo are usually absent. He relies in his diagnosis of hysteria largely on the difference between the whispered voice test and the tuning-fork tests. The former is heard from three to six metres, whereas the tuning-forks

give pure labyrinthine reactions, so that there is a difference from what one would ordinarily expect. In hysterical deafness there are usually other manifestations of hysteria, especially loss of the tactile sensations localized in the external meatus and even in the membrana tympani.

Dr. GEORGE E. SHAMBAUGH stated that it is not uncommon in severe cases of suppurative otitis media to find unmistakable evidences of involvement of the labyrinth which can be demonstrated by the loss of perception for the higher tones. In a patient recently under his observation the defect for the Edelmann-Galton whistle extended in the one ear as low as mark "14," and in the other ear as far as "9." Within three weeks after the suppuration had subsided the perception for the higher tones had returned, so much so that the Galton whistle could be heard as high as "5" and "4" in the two ears. He does not think there has been a suppurative involvement of the labyrinth in such cases. He believes the pus invasion of the labyrinth must invariably result in total destruction of function. In regard to the case reported by Dr. Holinger of otosclerosis with symptoms of labyrinthine deafness and an absence of ankylosis of the stapes, Dr. Shambaugh believes this must be accepted as one of the established facts in regard to this process. The first cases which were reported, where a diagnosis of otosclerosis was clearly made, were cases of typical ankylosis of the stapes, and, of course, post-mortem findings discovered a spongifying process in the region of the oval window. For this reason the term otosclerosis came to be considered by many as synonymous with bony fixation of the stapes. As a matter of fact the underlying pathological process, that of spongification of the labyrinthine capsule, may take place in parts of the capsule at a distance from the oval window. Here we would find symptoms typical of labyrinthine deafness with an absence of any evidences of fixation of the stapes. The diagnosis of otosclerosis where the foot plate of the stapes has become fixed offers no great difficulty, especially when there has not existed some previous middle ear trouble. The diagnosis, on the other hand, is not so easy in those cases of otosclerosis where the foot plate of the stapes has been left free, and where the deafness is of a labyrinthine type. Yet



in some of these cases a probable diagnosis can be made from the type of the onset, the age of the occurrence of the deafness, the history of other cases of otosclerosis in other members of the family. In such cases the diagnosis will be all the more certain if there is present the reddish glow transmitted through a normal drum membrane from congestion of the promontory.

Dr. A. H. ANDREWS asked Dr. Holinger whether there was any way of making an immediate positive diagnosis of hysterical deafness. He had not been able to say absolutely of any case that it was one of hysterical deafness, although he had been able to say that he believed it to be such, and when the patient recovered suddenly, independent of treatment, he felt certain that the diagnosis of hysterical deafness was the correct one.

Dr. HOLINGER (in closing) said he could not say anything about temperature previous to his own examination. The temperature was taken regularly at the hospital while under his care, and there was no rise in temperature noted. He believes that when a patient can be examined with the tuning-forks a positive diagnosis of hysterical deafness is possible. The psychic element must, of course, be excluded. In regard to otosclerosis he pointed out that Professor Lucae, in his book on chronic progressive deafness, places the word otosclerosis throughout in quotation marks. This is done because in the condition described as otosclerosis there is no sclerotic process present, but a spongifying process of the labyrinthine capsule. Had the expression spongifying been preserved and the term otosclerosis dropped, a good deal of confusion would have been avoided.

REPORT OF THE TRANSACTIONS OF THE SECTION ON OTOTOLOGY OF THE NEW YORK ACADEMY OF MEDICINE.

REGULAR MEETING MARCH 13, 1908. DR. A. B. DUEL IN THE CHAIR.

*Presentation of Cases.*

**Case of recurrent keloid of scalp and lobule of ear.** By G. H. COCKS. (Published on page 202.)

*Discussion.*—Dr. DENCH said that he had recently had a case somewhat similar to the one presented, and in which he had suggested the use of either the X-ray or the radium treatment for reduction of the growth. He had referred the case to Dr. Abbe, a well-known authority on the use of the X-ray and of the radium ray, and Dr. Abbe had said that in keloids of this character no benefit could be hoped for. Either the radium treatment or the X-ray treatment might aggravate the case if too prolonged exposure were to cause a burn. Dr. Abbe believed that the best results were obtained, in these cases, by a free excision of the keloid growth and the application of large Thiersch grafts. In the case under discussion, the tissue of the lobule appears to be different from that in the supra-auricular region.

Dr. Dench suggested that the growth in both regions should be treated by free excision and the application of large Thiersch grafts.

*Papers.*

**The toxæmia of latent erysipelas in its relation to otitic serous meningitis.** By FRED WHITING, M.D.

*(Abstract.)*

This paper recites a series of cases of mastoiditis in which certain manifestations arose subsequent to operation, which so strongly simulated the symptoms of meningitis as to lead to a diagnosis of that complication. The cases are five in number, and all present symptoms more or less analogous to each other. In but one case did serous meningitis develop, although the symptoms manifested in every instance rendered the probability of such a complication imminent. All five appeared to be doing perfectly well for three days after operation, when the temperature rose with suddenness to  $102-104^{\circ}$ , the patients became irritable, and within a few hours a mild delirium supervened, which later became violent; within twenty-four hours after the rise of temperature, coma developed. Upon removing the dressings and investigating the wounds, four of these cases were found to present no inflammatory or other changes; while the fifth case showed a very pronounced bulging of the dura through the opening in the floor of the skull which had been made at the mastoid operation. This meningocele was incised, with the escape of a large quantity of cerebro-spinal fluid, after which the lateral ventricles were tapped, with the escape of additional cerebro-spinal fluid. The removal of this fluid was followed by a rapid rise in the pulse rate of the patient, from 60 to 120, but the character of the respirations, which had been pronouncedly irregular, was unaltered by this relief of pressure. This patient died within twenty-four hours after the evacuation of the cerebro-spinal fluid.

In the remaining four cases, after delirium and coma had persisted for variable periods of time, from twenty-four to forty-eight hours, the integument about the wound showed a blushing discoloration together with œdema and swelling, which rapidly spread upward over the scalp to the vertex of the skull, thence down upon the opposite side of the head and neck. With the appearance of this cellular inflammation upon the integument, making clear the diagnosis of erysipelas, there was a rapid subsidence of delirium and of all other alarming symptoms, intelligence was speedily restored, and control of all physical functions regained.

In all five of these cases many essential symptoms of meningitis were wanting; none the less so closely did the symptoms simulate meningitis that several of New York's most distinguished consultants made unqualified diagnoses of meningitis with equally positive prognosis of fatality.

Of the four cases which recovered, one presented especially severe manifestations. He was suffering from a double mastoiditis, the result of streptococcus infection, and when delirium and coma developed his case was pronounced hopeless, and upon consultation it was advised that nothing in the way of surgical or other relief be attempted. This patient received two subcutaneous injections upon the back of the arm, of anti-streptococcic polyvalent serum, the combined amount of the serum administered being 75ccm. Within a few hours consciousness began to return, and within twenty-four hours was fully restored.

Just what value may properly be attributed to the use of the serum injection must—inasmuch as it was tried in but a single case—remain problematical.

As to the character and extent of treatment to be instituted in such crises as the foregoing histories represent, there is reason in the judgment of the writer for pursuing the following course—namely, when no paralyses have appeared, when Kernig's sign is not present, when examination of the ocular fundus is negative, and when lumbar puncture has resulted in a negative finding,—under such circumstances the writer feels fully justified, upon the appearance of delirium and coma as complicating manifestations in mastoiditis of streptococcus origin, in diagnosing toxæmia of erysipelas as the probable disturbing factor, and in administering an antistreptococcus serum forthwith; in addition to which therapy, in the event that the cases do not improve within twenty-four hours, he would recommend the employment of bacterial vaccines, which can be prepared in one day from the patient's own bacteria, and the dose of which can be accurately regulated to conform to the degree of impairment sustained by the patient's opsonic index, as the result of inflammation.

Dr. GRUENING said that when he first read the title of Dr. Whiting's paper he wondered what would be presented, for the toxæmia of latent erysipelas was not known to him.

He knew erysipelas when present, and he knew that erysipelas can produce all the symptoms of any toxic disease. When we have typhoid or scarlet fever, we also have symptoms of meningeal irritation, but we are not so active and do not consider it necessary to perform surgical operation on the meninges. In mastoiditis and its various complications we often have brain symptoms, viz., vomiting, unconsciousness, optic neuritis, and many conditions which simulate meningitis, but are not actual meningitis. In such cases we are inclined to be too active, and to expose the brain and cut the meninges.

Dr. Gruening said that he had observed cases like those reported by Dr. Whiting, but had not named them latent erysipelas. When, after an ordinary mastoid operation, the patient has a temperature of  $104^{\circ}$ , restlessness, and vague meningeal irritation, he suspects the nature of the condition and generally finds that the auricle is swollen. This swelling of the auricle accompanied by high temperature is almost pathognomonic of erysipelas. This very day he had diagnosed a case of erysipelas with no other sign than the swelling of the auricle. The patient had been discharged from the hospital, but lingered for two or three days. The physician in charge ceased to take any interest in her, considering her a dispensary patient as her discharge had been signed. When Dr. Gruening saw her she had a temperature of  $104^{\circ}$ , and on removing the dressing he found the auricle to be swollen. The diagnosis of erysipelas was made, and the patient was sent to the observation house.

Most of the cases of erysipelas reported by Dr. Whiting had been cured without the antistreptococcus serum, so that it was demonstrated that the cases could be cured either with or without this treatment. His own cases were cured without the serum.

Lumbar puncture is not always advisable. If, in the fluid obtained, we at times find leucocytes, polynuclears, and even streptococcus, we are not entitled to make a diagnosis of streptococcic lepto-meningitis. These have been found where there was no meningitis. It is well known that in cases of sinus thrombosis, for instance, the streptococcus enters the blood, the cerebro-spinal fluid, and is found by lumbar



puncture. A diagnosis of meningitis may be made where the condition is one of sinus thrombosis. The patient who suffers from a diffuse streptococcic lepto-meningitis usually dies. In serous meningitis, on the contrary, the patient generally gets well. The cases reported by Macewen were not cases of diffuse purulent lepto-meningitis. They were diagnosticated as meningitis after the escape of a turbid fluid from the arachnoid space. Dr. Gruening had never yet seen a case of diffuse streptococcic lepto-meningitis of the convexity recover, but hoped that by the injection of streptococcus serum, success in treating this condition might be obtained in the future.

Dr. DENCH said that he had very little to add to Dr. Whiting's excellent presentation of the subject. He did not, however, quite agree with Dr. Gruening in regard to the incurability of meningitis, nor in his criticism of Macewen's cases. Dr. Dench had reported in the *Transactions* of the American Otological Society, 1896, volume vi., page 315, a case of otitic meningitis, which had recovered completely after operation. In this instance, Dr. Dench thought that he had to deal with a brain abscess. Upon incising the dura there was a free serous discharge, and as the brain substance looked normal it was consequently not explored. The subdural space, over the tympanic roof, was packed with gauze, and the patient made a complete recovery. This case was under observation for a number of years, and the recovery was absolute.

In regard to the developing of erysipelas, following the mastoid operation, he had seen a number of such cases, but had not found that the erysipelas was necessarily attended by graver symptoms than in those cases of so-called idiopathic facial erysipelas. In a very large proportion of his own cases, where erysipelas had supervened, the erysipelatous inflammation developed at a point remote from the wound. It seemed to the speaker that the term "meningismus" was much more applicable to these cases than the term "serous meningitis," meningismus being a term used to designate certain obscure meningeal symptoms, simulating those of meningitis, and yet where true meningitis could not be demonstrated either before or after death. As a matter of fact, most of the cases

of meningismus recover. This is also true, however, of the cases of serous meningitis. In the International Congress held at Bordeaux, 1904, Lermoyez reported two cases, in which drainage of the subdural space and repeated lumbar puncture had effected a cure. In one of these cases the brain tissue was also incised. In both these cases there were well-marked symptoms of meningitis. Very frequently, lumbar puncture is of no value, but at times it is of considerable therapeutic value in cases of serous meningitis.

With reference to the question of serous meningitis following mastoid operations, Dr. Dench had requested Dr. Charles E. Perkins, one of his assistants in the clinic at the New York Eye and Ear Infirmary, to look over the literature of the subject. Out of 100 cases collated, 38 were of the serous variety. All of these recovered, with one exception, and this was complicated by a small cerebellar abscess.

The operative procedures in these cases varied from the simple mastoid or radical operation, to incision of the meninges and sometimes of the brain substance itself, with drainage of the ventricles.

It would seem, therefore, from this rather extensive series of cases, that serous meningitis, complicating mastoiditis, was not a grave condition.

Regarding the use of anti-streptococcus serum, Dr. Dench had had experience with this in but one single case. In this instance, the patient had suffered from a sinus thrombosis, and, at the same time, from a lobar pneumonia. The condition of the chest precluded operative interference until a very late date. As soon as operation was at all feasible, it was performed, the clot cleared out from the sinus, and the jugular excised. At this time, the patient had streptococci in the blood. An anti-streptococcus serum was administered, but the patient died in spite of the injection of the antitoxin.

Dr. McKERNON said that there was very little that could be said after Dr. Whiting's valuable paper. He agreed with Dr. Whiting that lumbar puncture is of decided value. Two years ago he had a case of the serous type of meningitis following mastoid, where lumbar puncture was done. The patient was twenty-two years of age, and all the symptoms of meningitis developed on the fourth day after operation.

Nearly all the eye symptoms were present. Babinsky's sign was present, there was a low muttering delirium, and the temperature ranged for  $100.5^{\circ}$  to  $105.5^{\circ}$ —going up at night and coming down the next day. Lumbar puncture was performed, and the first 30ccm. of fluid came out with a decided pressure—simply spurted out. After that, 10ccm. more were drawn, and this oozed out slowly. After this all the active symptoms subsided for twenty-four hours, when they again appeared and another lumbar puncture was performed, drawing out 18ccm. of serous fluid which did not exhibit signs of pressure. On the first puncture the fluid was examined, smears were made and cultures taken, but all proved negative. The fluid from the second puncture also proved negative. Two days later the symptoms occurred again, and another lumbar puncture was done. After that the symptoms improved and the patient went on to recovery. Lumbar puncture has a distinct value in serous meningitis.

Dr. McKernon said that he did not think all cases of purulent meningitis ought to be given up as hopeless. Two years ago he had briefly reported a case which had been operated upon during the active stage of meningitis. Lumbar puncture was performed before the mastoid operation, and the fluid was found to be filled with streptococci. Mastoid operation was done that night. The patient was in a very extreme condition. A large area of the dura was exposed, and over the floor of the middle fossa the dura was bulging. After the operation had been completed, the dura was incised here, and a large amount of cloudy fluid came out. Some of this was collected in a test tube and upon culture contained streptococcus pure and simple. The high temperature continued for eight or ten days; lumbar puncture was performed five or six times, and the patient went on to complete recovery. If no attempt is made to save a case of purulent meningitis it will certainly die, but if one is saved out of a large number it is a decided advantage.

Dr. McKernon also had observed the swollen auricle which Dr. Gruening had referred to as being one of the first signs in erysipelatous cases. Not twenty-four hours before he had been called in consultation, and one of the first things that he had observed was a distinct erysipelatous blush

over the auricle, spreading finally over the face. In the last four or five years he had seen several cases of erysipelatous rash following a mastoid operation, but the erysipelatous condition did not seem to proceed further and disappeared on the application of ichthyol and collodion. It did not seem to be a true erysipelatous inflammation. He thought there was a distinction to be made between a true erysipelous inflammation and the streptococcus rash which we sometimes see.

He had had no experience with the streptococcus antitoxin, but saw no reason why it should not be tried in private cases.

Dr. GRUENING said that he did not regard those cases in which lumbar puncture was performed and streptococci found and which afterwards recovered, as cases of purulent meningitis. In his previous remarks he had referred to cases of purulent lepto-meningitis. There are various conditions in which streptococcus may be found in the cerebro-spinal fluid and yet not be a meningitis. The very fact that these patients did get well was to him sufficient proof that they did not have lepto-meningitis.

Dr. SEYMOUR OPPENHEIMER reported a case under his observation—not of erysipelas, but in connection with the question of anti-streptococcus injections. The patient was a little girl, nine years of age, seen first twelve days before in a state of coma, with a temperature of 106.5°. She could not be aroused, and was very pronouncedly delirious. She had all the evidences of acute mastoiditis. A diagnosis of acute mastoiditis with intracranial complication was made. She was operated upon promptly, and the mastoid was found to be enormously destroyed, and the sigmoid sinus contained a thrombus. Blood cultures showed the presence of streptococcus. There was a large necrotic area over the roof of the tympanum, through which quantities of pus escaped. This area was removed, and behind it was found a large amount of purulent material. The dura was bluish black. Incision was made and the underlying brain substance was found to be undergoing softening. There were very decided adhesions of the dura to the brain substance itself, and areas of fibrinous exudate. The diagnosis of meningitis was made. The operative findings were meningitis, extradural and sinus

thrombosis, complicating acute mastoiditis. Lumbar puncture was performed, and the fluid withdrawn contained large quantities of pus cells, but no bacteria. The following day the patient was still in a comatose state, and it was suggested that injections of antistreptococcus serum be made into the spinal canal. This was done after the withdrawal of a large quantity of cerebro-spinal fluid, which was still purulent, and under great pressure. Twenty-four hours later the patient was more rational and has continued to improve to the present time, although there is present a large area of necrotic brain substance, involving the temporo-sphenoidal lobe. Transitory aphasia is present. A second blood culture was made which proved to be sterile. Cerebro-spinal fluid is now clear. The idea of intra-spinal injection of anti-streptococci serum is somewhat in advance of Dr. Whiting's suggestion in regard to its hypodermic use.

Dr. W. SOHIER BRYANT said that he had never had a case of erysipelas of his own and consequently had had little experience with the disease. He had had a case of streptococæmia of aural origin which did not improve after anti-streptococcic vaccination although some of the vaccine used had been prepared from the patient's own organism. The essential difficulty was the length of time before the beneficial effect of the vaccine could appear. The patient finally died of extensive thrombosis, streptococæmia, and meningitis. This case was published about a year ago.

Dr. DUEL said that in the experiments with antistreptococcus serum both brilliant results and complete failures have been reported, and that the point which Dr. Whiting had made of the necessity for recognizing the difference in the virulence of the organism was most important. Most of us are optimistic enough, from the reports which have been made, to feel that we are on the eve of great discoveries in the line of antistreptococcus serum, but there must be some method of recognizing the different varieties of the organism before we can reach any state of perfection in the matter.

REGULAR MEETING APRIL 10, 1908. DR. A. B. DUEL, CHAIRMAN.

*Reports of cases.*

**Case of cholesteatoma.** Presented by J. E. SHEPPARD, M. D.



The patient was a male, aged 35 years, when first seen in March, 1897. Some 15 years before, when he was 19 or 20 years old, he had a mastoid trouble of some kind. At that time Wilde's incision was considered the proper treatment for such conditions, and this operation was performed. Judging from the scars now present, he evidently had at that time at least three sinuses running down his neck, and one over the anterior portion of the occipital bone. When I first saw him the auricle was projecting from the side of the head, there were oedema, redness, and tenderness of the mastoid, and one or two of these old sinuses open. He was sent to the hospital for operation, and a large mass of cholesteatoma was removed from the mastoid region behind the ear. The wound finally skinned over with a large opening behind the ear. The posterior canal-wall was gone, so that one could look directly into the canal, the tympanic cavity, and down into the mouth of the Eustachian tube. After healing had been accomplished, the problem of closure by means of a plastic operation presented itself, but I always had the feeling that it was unnecessary and possibly unwise. The patient was kept under observation for four or five years, and then was not seen until almost two weeks ago, an interval of six or seven years. He then reported at the office, saying that for the last week or two and occasionally through the winter he had had a little pain around the temporal region which he thought was due to cold, but that the last attack had been a little more severe and persistent than the others, and that when wiping out the old depressed cavity some little white particles came out on the cotton. Examination revealed on the posterior surface of the old operated cavity an appearance closely resembling that of a spot of mycosis on the tonsils. On digging into this through the old opening part of a two-ounce bottle full of cholesteatoma was removed. A week later he was put under an anæsthetic in the Jewish Hospital, and the cavity emptied. In cutting down through the old scar over the occipital bone a large mass of cholesteatoma was found. The outer as well as the inner cortex had been destroyed over a large area. This you will remember is the second cholesteatomatous growth in this patient, and in clearing it out the former operated

cavity was entered, and the two cavities thrown together.

One word more. It does not seem to me that this is a part of the first cholesteatoma in any other sense than that the two originated in the same process. It is my opinion then that this growth began when he was 19 or 20 years of age, and had no connection with the one which was operated upon in 1897. The leaving of the old wound open was possibly his salvation, for in the concentric growth of this mass it came to the surface in the old operative wound first, and had it not become visible in this region the cholesteatoma might have easily extended entirely unsuspected, even to the point of perforation of the dura.

*Discussion.*—Dr. DENCH said that about ten years ago, he had operated upon a case of extensive cholesteatoma, closing the posterior wound. During the last year, the patient had suffered from some aural symptoms, and on inspecting the meatus, he was able to see a mass of cholesteatomatous deposit. He operated a second time, again closed the posterior wound, and the operation had been followed by a complete cure. He believed that in all of these cases the posterior wound should be closed, and that the external auditory meatus should be sufficiently enlarged in order that every portion of the operative cavity may be inspected through the external auditory canal. By following this plan it is possible to deal with any recurrence of the cholesteatomatous deposit directly through the enlarged external meatus.

Dr. Dench inquired if Dr. Sheppard believed that the secondary cholesteatoma had its origin from the epithelial tissues of the neck. As far as he knew, no similar case had been reported in literature. In all cases of cholesteatoma, he was in favor of making a large external meatus, and completely closing the posterior wound.

Dr. SHEPPARD said that he thought it grew from one of the sinuses which formed back in '82 when the original Wilde's incision was done. The present scar indicates that there was a sinus open at that point, and it seems to him that a second desquamating focus developed, which had no connection whatever with the focus previously opened.

Dr. ALDERTON said that we may have to revise the idea of cholesteatoma originating in the tympanic cavity. He

had had a case last year which had existed for a long time previous to operation. There were a number of isolated foci in the mastoid process. There was no direct connection between the tympanic cavity and these foci and yet there were evident cholesteatomatous masses in the isolated cavities.

Dr. DENCH said that he had found isolated masses of cholesteatomatous material in the mastoid cells. He reported last year two cases of extensive cholesteatomatous deposit, involving all the mastoid cells. He was inclined to believe that the epithelial elements of the growth were always derived from the epithelium of the external auditory canal finding an entrance into the tympanic cavity. If this were not the case, we should certainly have to revise our pathology of cholesteatoma of the middle ear and mastoid.

Dr. SHEPPARD, in closing the discussion, said—referring to the closing of the wound—that the patient has already a good-sized meatus, but the angle was a wide one and the introduction of a straight probe demonstrated the impossibility of seeing within  $\frac{1}{2}$  of an inch of the edge where the cholesteatoma broke through. Unless there had been an extraordinarily large external meatus the condition would certainly have escaped observation.

**A new instrument for the treatment of diseases of the ear.** By Dr. E. P. FOWLER, published on pages 205-210.

*Discussion.*—Dr. DUEL said that he could testify to the suction power of the apparatus for he had seen it used on patients at the Manhattan Eye and Ear Hospital and had introduced it at the Babies' Hospital. This testimony was unnecessary, however, for all had seen the demonstration. It has not yet been put on the market, but he hoped it would be soon, for it was a very useful addition to our armamentarium.

Dr. MEIERHOF said—referring to the force of the fluid on the mastoid cells—that there would not seem to be any danger of the fluid finding its way into the antrum owing to the inflamed mucosa of the aditus, but that in young children there might be danger where there were dehiscences in the roof of the tympanum. The apparatus seems to have a very wide method of application, especially since the BIER method of

treatment is so much in vogue. It can be used in the ear also without douching, where BIER recommends the keeping up of continuous suction processes.

Dr. FOWLER said that the apparatus had been used very satisfactorily for other purposes than that for which it had been originally constructed.

Dr. DIXON presented a skull showing abnormalities of formation.

Dr. Dixon said that when he saw by the announcement card that Dr. Dench would report a case of sinus thrombosis following removal of granulations from the middle ear he had thought that the members would be interested in seeing this skull. At the Infirmary, through the work of Mr. Burchell, they had opportunity to examine a great many temporal bones and skulls, and during the past week or ten days they had been fortunate in finding this one. It was asymmetrical. On the right side the cerebellum seems to have been small. The vertical ridge of the occipital was pushed to one side and there was scarcely any sinus groove on the right. There were two openings of exit from the skull, which apparently transmitted a divided sinus. There was no dome or jugular fossa on that side. On the left side the sinus groove was large and far forward. The dome was found to be very large, so that a thumb might be passed into it. There were dehiscences at the side and one at the top, so that it would have been a very easy matter to set up a primary trouble in the bulb of such a dome. He had seen many hundreds of skulls, but never before one like this. The whole skull seemed to be twisted, and the right side of the brain had apparently been atrophied.

(a) **Unusually atypical case of sinus thrombosis. Importance of blood culture in diagnosis.** By SEYMOUR OPPENHEIMER, M.D. Published on pages 197-201.

Dr. DENCH said that while the blood culture was a valuable aid to diagnosis, he thought that the temperature chart in Dr. Oppenheimer's case would have enabled one to make the diagnosis perfectly, without any blood culture. While a blood culture is valuable in these cases, it is seldom essential to diagnosis.

Dr. OPPENHEIMER, replying to Dr. Dench, said that the

neck symptoms appeared on the same day as the rise in temperature, following a three-days' normal temperature.

Dr. SHEPPARD recalled two cases, both women, one aged 76 the other 82. He had not looked up their histories of late, but they seem to have differed from the Doctor's group of cases in that both had perforated membranes and sufficient pain and tenderness to make clear the fact that something needed to be done.

In response to a query as to whether any of the cases showed diabetes, Dr. ALDERTON replied that they did not.

(b) **Cases of mastoiditis in the aged.** By H. A. ALDERTON, M.D. Published on pages 190-196.

*Discussion.*—Dr. DUEL said that last year he had reported an interesting case similar to those which had just been reported. The patient was an old man who had suffered from pain in the mastoid for three weeks. On examination there was no evidence of any middle ear suppuration, but, on opening the mastoid cells on account of extreme tenderness, all the cells were found filled with pus. There was also an abscess in the neck resulting from a perforation of the cortex at the mastoid tip.

In reply to a query from Dr. Dixon as to whether any bacteriological examination had been made, Dr. DUEL answered in the negative.

(c) **Case of mastoiditis complicated by purulent meningitis, encephalitis, phlebitis of sigmoid sinus, jugular bulb, and internal jugular vein. Operation; recovery.** By J. F. McKERNON, M.D. Published on pages 183-189.

*Discussion.*—Dr. SHEPPARD congratulated Dr. McKernon on the results obtained in this case, and inquired whether he had ever tried the experiment of puncturing the spinal cavity, withdrawing fluid, and injecting a  $\frac{1}{4}$  per cent. solution of lysol. He himself had tried this on a desperate case during the past winter, which showed all the evidences of a meningitis which had lasted for several days. The intracranial cavity was opened and drained through the mastoid, the spinal cavity was punctured, and  $2\frac{1}{2}$  ounces of spinal fluid were withdrawn, and a like amount of  $\frac{1}{4}$  per cent. lysol solution injected. The case terminated fatally within 24 hours, so that he



had no success with this method to report, but he would like to know if others had tried it, and if so with what result. Reports of its use in a small number of cases make it seem worth while perhaps to have this in mind in addition to other methods. This case showed a streptococcus infection.

Dr. McKERNON, replying to Dr. Sheppard, said that he had had no experience whatever with injections of lysol.

(d) **Case of sinus thrombosis following removal of granulations from the middle ear. Excision of Internal Jugular Vein. Recovery.** By E. B. DENCH, M.D. Published on pages 211-214.

*Discussion.*—Dr. DUEL said that he would be glad to have an expression from the members as to whether it was their custom to remove granulation tissue and send the patients home directly afterward. This question had been very actively discussed in the NEW YORK OTOLOGICAL SOCIETY, with widely varying opinions as to the advisability of doing so.

Dr. McKERNON said that he believed such a procedure (the removal of granulations and sending the patient home) to be extremely dangerous. He had had a case attended with fatal result where the patient had been kept in the hospital for 48 hours after the granulation tissue was removed. There was only granulation tissue, no polypoid growth, etc., but 48 hours later a meningitis developed, and in three days the patient died. The autopsy showed purulent lepto-meningitis. He had also seen three other cases among his colleagues attended with similar results. It is much safer to do the radical operation, learn how much damage has been done and take proper care of the case.

In reply to a query from Dr. Sheppard as to how the granulation tissue was removed, Dr. McKERNON replied that it was done with a dull curette.

Dr. SHEPPARD said that it had been his rule for a number of years to be very chary of the use of the curette. If the granulation tissue was removable by a snare, well and good; but if it was so small that it was not capable of this kind of treatment he was inclined to remove it with caustics, but in either case was accustomed to letting his patients go home afterwards. He had always been afraid of a curette in such cases. He thought it was better to remove it by the slower method and keep the patients under observation.

Dr. MEIERHOF said that during a very long service in dispensary work he had removed granulation tissue from the middle ear many times, and had never to his knowledge such an experience as had been reported. In using the curette it should be applied softly and not against the bony base from which the granulations spring, especially in children where they recur very often. He was in the habit of putting alcohol in the ear, and then inserting cotton mops into the canal and wiping the granulations with some force. The mops are made fairly firm, and in a manner the granulation masses are squeezed or pressed and in this way one can get rid of them after a little time. They are liable to recur in children after some weeks, but by teaching the mothers how to wipe the granulation masses with alcohol their recurrence can be prevented. Merely putting in the alcohol is not sufficient, but by pouring in the alcohol and wiping it out down to the fundus of the canal there will be a considerable absorption of granulation tissue and an entire disappearance of suppuration. The syringe should not be used in these cases as the pressure of water favors the growth of granulations.

Dr. DUEL inquired whether Dr. Meierhof saw any danger in the use of the curette. It was a considerable matter to the mothers to use the hard cotton mop. He had understood him to say that the curettage should be done very gently, and that subsequently he taught that the hard cotton mop should be used.

Dr. MEIERHOF replied that it had been his habit in some cases to simply use the cotton mops to wipe out the granulation tissue—not using the curette at all.

Dr. OPPENHEIMER asked if there was not labyrinthine suppuration in those cases where Dr. McKernon had spoken of leptomeningitis following the removal of the granulation tissue, and possibly a fistulous opening leading into the labyrinth?

Dr. MCKERNON replied that he had been present at the autopsy in all the cases, and there was a perforation through the tegmen.

In reply to an inquiry as to whether the patient was operated upon the same day, Dr. DENCH answered in the negative.

The patient was kept under observation for 24 hours and during that time the temperature was practically normal.

Dr. DENCH said that he was very glad to hear the men express themselves as they had done this evening, for at a recent meeting of the New York Otological Society, he had been severely criticised for advancing the opinion that in all cases in which granulation tissue was found in the external auditory canal, and where there was a history of a chronic purulent discharge, it was better to perform the radical operation at once. He had taken this view of the matter, and had advocated radical operations in all cases where the external auditory canal was filled with granulation tissue, together with a history of a chronic purulent otitis media. He sometimes advised the removal of the granulation tissue first, following this operation with frequent antiseptic irrigation of the canal, in order to secure a more aseptic field for the radical operation. He had always held that it was absolutely unsafe to remove granulation tissue in the clinic, and then send the patient to his home. Whenever granulation tissue is to be removed, as the first step of the radical operation, the patient must invariably be kept in the hospital, under close observation. Dr. Dench agreed perfectly with Macewen, who pointed out, a number of years ago, that by the removal of granulation tissue an avenue of infection was opened, which might lead to infection either of the meninges or of the sinus. His own case showed clearly how sinus infection had occurred as the result of the removal of granulation tissue.

**Series of cases of mastoiditis with a great lack of symptoms.**

J. E. SHEPPARD, M.D.

The great dearth of symptoms, together with the enormous cell destruction extending toward the occipital bone, as well as an unusual involvement of zygomatic cells, and the fact that, with one exception, all were cases of staphylococcus infection, was the combination which led him to think this series of consecutive cases worth reporting.

Two or three of the cases had a little pain in the parietal region, another had only pulsating tinnitus, with deafness; two had the drum membrane opened on two occasions, and closed up with cessation of discharge, and the process still going on in the mastoid. One case, a child of four years,

complained of slight headache, without other symptoms, and had been playing around in its usual manner, so that the mother was very much astonished to learn of the true condition. In another case, the child had been ill with the measles and pneumonia, and knew of no ear trouble until the night before the case was seen by Dr. Sheppard, at which time there was distinct swelling over the mastoid. In this case, too, the parents were very much surprised to think that operation was necessary. In another case, the patient was a sailor who had been thrown against the mast, striking his head in the left fronto-temporal region, with nose-bleed following. The next day the left ear discharged some fluid. As to that patient, from December 19th until the day of operation, January 4th, he had been trying with daily observation to make up his mind whether or not there was trouble in the mastoid. There was no temperature, no pain, only a little pulsating tinnitus, which was not constant. A suspicious sagging of the postero-superior canal wall was the point upon which the diagnosis for operation was finally based.

In another case the patient was a nurse, seen early in December, suffering with violent pain in both ears, which had lasted in one ear for 24 hours, and in the other 6 hours, before the doctor was called in. Both drums were incised at once, and staphylococcus was found. As in the other cases, the symptoms practically all subsided excepting the pulsating tinnitus. One ear was operated upon December 16th, and there was found an enormous destruction of the mastoid, but it was not until January 14th that the second ear was operated upon, and this was only done because the doctor was afraid not to, as the patient did not seem to get well; and considering the experience with the first ear where there were practically no symptoms and the tenderness was nil, although very hard pressure was made, it seemed wise to operate on the second ear also, when a condition similar to that found in the other cases was disclosed.

Dr. DENCH asked if he was correct in understanding Dr. Sheppard to say that the membrana tympani had been incised two or three times. The speaker felt very strongly upon this subject. He was convinced that if myringotomy was thor-

oughly done the first time and no relief followed, or if the opening closed, and symptoms either of retained secretion in the middle ear or mastoid symptoms of temperature, not assignable to any other cause, continued, this, in itself, was a sufficient indication for opening the mastoid. He believed that repeated myringotomy was unwise, in these cases, as it simply served to mask the symptoms.

In reply to the inquiry as to whether he would not perform a second myringotomy, Dr. Dench said that he would not do so, provided the first myringotomy had been thoroughly performed. In his experience, covering a number of years, he had rarely found it necessary to do a second myringotomy.

Dr. SHEPPARD said that sometimes he did a second myringotomy when he was not satisfied that anything else was necessary, and when believing that the case might yet clear up. He had had consultants from New York give such advice, and he had done it himself frequently, and supposed it was the usual thing to do in border-line cases. In addition to a second incision of the drum membrane in the last case reported he had had the pathologist give the patient two injections of polyvalent (opsonic) fluid, the idea being that with a little boost nature might bring her through without operation, but it was without avail for the mastoid was completely gutted out, the same as in the other ear.



# REPORT ON THE PROGRESS OF OTOTOLOGY DURING THE SECOND QUARTER OF THE YEAR 1907.

BY PROF. ARTHUR HARTMANN, BERLIN.

Translated by Dr. ARNOLD KNAPP.

## ANATOMY AND PHYSIOLOGY.

527. CALAMIDA, U. Varieties and anomalies of the mastoid process. *Arch. int. d'otol.*, etc., xxiii., No. 2.

528. EWALD and JADERHOLM. All noises if they are interrupted become intermittent tones. *Pflüger's Arch. f. die ges. Physiologie*, cxv., pp. 555-563, 1906.

529. GEIGEL. The importance of the auricle for hearing. *Münchn. med. Wochenschr.*, 1907. No. 30.

530. ABELS. On after-sensations in the kinesthetic and static sense. *Zeitschr. f. Phys.*, xliii., pp. 268-269 and pp. 374-422.

BREUER. Remarks on the above paper. *Ibid.*, xlv., pp. 85-91.

ABELS. Is after-vertigo caused in the end-organ or is it nervous? Answer to the remarks of Dr. Breuer. *Ibid.*, xlv., pp. 85-91.

531. HARMAN, N. BISHOP. The origin of the facial nerve. *British Med. Journal*, 1907, ii., p. 1296.

532. GUTHRIE, T. Development of the mastoid. *British Med. Journal*, ii., p. 986.

527. CALAMIDA. Varieties and anomalies of the mastoid process.

The size and extent of the antrum and of the other mastoid cells were examined during the course of four hundred operations on the mastoid process in the Gradenigo clinic, and the different varieties and anomalies noted. The results cannot be compared with those obtained from the cadaver. In 3.25% of the cases the sinus was contiguous to the anterior wall of the auditory canal.

OPPIKOFEK.

528. EWALD and JADERHOLM. All noises if they are interrupted become intermittent tones.

The method of experimentation of the authors was as follows: The noises were produced in an isolated room so that they could not be perceived by the observer directly, *i. e.*, without telephonic transmission. They were produced directly on the plate of a receiving telephone on which shot was caused to rotate, or sand was brushed, or the plate was directly exposed to a stream of water. In each case the noises were produced with a view to clearness and without the production of any individual tones. The intermissions were produced by interrupting the current which connected the receiving telephone with the delivery telephone. To bring about this interruption two tuning forks were used in rotation, one with 100 vibrations per second, the other with 128. The interrupting fork, driven electrically, closed the contact with one plate which was in connection with a hard metal contact point; on vibrating upwards the opening resulted. The 100-fold and 128-fold interruptions of the noise were always perceived in the receiving telephone as a tone of 100 or 128 vibrations, and according to the well-known rapid picture of Ewald, that uniform periodic interruptions, not only of tones but also of noises, produce in the ear subjective sensations of tone, the authors have been led to regard their results as confirmatory of Ewald's theory of hearing. They have, however, forgotten to prove that these interrupted tones are not produced physically in the telephone membrane. The reviewer inclines to regard this as most likely after his large experience with membrane clang-tones and interrupted tones. In any case, the noise interruption tones of these authors are not explained and do not advance our knowledge of hearing in any particular way. KARL L. SCHAEFER.

529. GEIGEL. *The importance of the auricle for hearing.*

Hearing is supposed to result principally from the transmission of sound waves from the air to the cartilage in the auricle, then to the cartilaginous canal, the bony canal, and finally to the drum membrane, while the air conduction directly through the drum membrane is of much less importance. Geigel comes to this conclusion through the following explanation: On approaching the hand to the auricle, at first without touching it, a noise is heard more loudly; if the auricle is touched the noise is very much more intense.

The reviewer is not able to confirm this last observation. Geigel, moreover, thinks he has observed a confirmation of his views from the fact that the hearing is not diminished when the ear canal is closed with cerumen which is not in contact with the drum. This observation is clearly erroneous, as it is well known that on occluding the ear the hearing is very much worse.

SCHEIBE.

530. ABELS and BREUER. *On after-sensations in the kinesthetic and static sense.*

This excellent and suggestive paper of Dr. Abels is principally a critical one. He reviews the facts published by Mach, Breuer, Hitzig, Jensen, Ewald, and others from new view points. Abels does not support Breuer's hypothesis that the ampulla generates the irritation. Breuer assumes as is well known, that at the beginning of rotation towards the right the endolymph remains in the right horizontal semicircular canal, and thus the cupola is displaced along the canal towards the ampullary crest of the right semicircular canal. If the rotation continues for any length of time the cupola returns to its normal position, partly by elasticity of the ciliary processes and partly through the retraction of mucous bands and mucous ducts. If this point is not attained the irritation of the hair-cells of the ampullary crest and the sensation of rotation continues. Abels does not believe that a sensation of long duration can follow an irritation acting for only a moment, for in that case the sensation of the vestibular apparatus would be different from all other organs of sense.

He gives another explanation of the fact why a sensation persists for some time which is generated at the first moment of a rotation of some duration. He believes that a centrifugal force which constantly acts during rotation—in other words, a continuous active acceleration—is perceived for quite a long time, and that this completes the feeling of rotation. Breuer answers this view of Abels by stating that the centrifugal force only causes a perception of deviation from the vertical and has nothing to do with the sensation of rotation. If we disregard this sensation we will discover a vestibular nystagmus persisting for quite a long time on rotation continuing for some time. Experiments which the reviewer has made

on the rotating chair and the rotating disk have shown, as was to be expected, that this nystagmus is entirely independent of the centrifugal force. It can, therefore, only originate in the semicircular canal apparatus. This probably shows the incorrectness of Abels's view that an irritant working for a moment in the ampulla can produce only a momentary effect, and it can be regarded as settled that this momentary irritation can produce an action of some duration which sometimes consists in a sensation of rotation which persists for some time, and at other times in a nystagmus which is reflexly produced and also persists for some time. This, however, does not in any way prove Breuer's hypothesis of the generation of irritations in the ampulla. This, in fact, can only be proven by direct inspection. One can perceive that a momentary blow of the endolymph may be active as a vestibular irritant, and that the duration of the sensation, *i. e.*, the nystagmus, can be produced by the generation of certain forces in nerve centres (Deiters's nucleus). Up to a certain point we are forced to assume central causes to explain nystagmus. If we should examine nystagmus during rotation or the after-nystagmus in a large number of individuals, we would find enormous differences in the duration of the horizontal nystagmus. The greatest extremes vary between 14 seconds and 2 minutes. A great difference will be observed in the same individual between the duration of the horizontal and of the rotatory or vertical nystagmus. While the sensation of apparent rotation in horizontal after-nystagmus is the shortest and weakest, this may often persist for  $1\frac{1}{2}$  minutes longer than the rotatory or vertical nystagmus which rarely lasts longer than 15 to 20 seconds. These facts can only be explained as of central origin, as the condition of the sense-organs cannot cause such differences. The phenomenon of the secondary after-nystagmus which appears in the direction of rotation can only be explained centrally. Abels cites the well-known experiment of Ewald with the pneumatic hammer to prove his contention that the blow of the endolymph which produces the irritation can only cause a momentary effect. In this case the glass hammer which is fastened to the canal resembles in action a slight movement of the head. Breuer has already replied that in

this experiment the nerve apparatus must certainly have been damaged and that the cupola was certainly torn away.

The reviewer has made similar observations to Ewald's experiment in persons with labyrinth fistulæ. If the vestibular apparatus had already lost by disease its sensitiveness for rotation and irrigation, condensation of air and rarefaction in the external auditory canal and pressure on the fistula would at once result in a single slow ocular movement. In cases, however, in which the sensitiveness was not affected, this experiment resulted in producing marked nystagmus lasting for five minutes. This observation shows the decided though brief duration of a momentary irritant.

Dr. Abels's remarks on galvanic after-vertigo are highly interesting. One fact this author has not sufficiently dwelt upon, *i. e.*, that vertigo and nystagmus are produced by the opening of a galvanic current. If the cathode is placed at the right ear, on opening the current rotatory nystagmus to the left is produced exactly of the same character as if the anode were placed on the right side, only then of less intensity and duration. The cause of this vertigo on the opening of the galvanic current, according to Abels, is the preceding irritation of the centres by the galvanic current. In this connection it must be further remarked that if the cathode is placed near the ear, the vestibular nerve is put in a condition of catelectrotonus. This produces a continuous irritation of the nerve, its conducting power is increased, and peripheral irritations are more easily transmitted. Breuer has assumed that a constant slight movement of the endolymph is present in both labyrinths, and that these movements act as independent irritations. As the movements in the two labyrinths are produced simultaneously, normally the two opposed irritations neutralize each other. If, however, catelectrotonus is present on the right side, then the irritations from the right labyrinth are increased, and nystagmus to the right is produced. Even if one does not support Breuer's hypothesis of independent irritations of this nature, one must nevertheless assume that constant irritations are carried on to Dieters's nucleus, either from the sensory cells or from the vestibular ganglion, and the action of the anode which produces nystagmus to the opposite side cannot be



explained in any other way than that the anelectrotonus prevents the transmission of irritations to that side and that in this way the opposite side has a preponderance. The onset of nystagmus on opening the current can also be explained by the fact that after the cessation of a catelectrotonus a transient diminution of the conducting power of the irritated nerves takes place, thus allowing the opposite side to preponderate. It is also possible that in the production of nystagmus on the opening of the current, the diminution of the conducting power in the irritated nerve as well as central processes are of moment. We can assume with great probability that Deiters's nuclei are factors in preserving a constant vestibular tonus of the eye muscles, inasmuch as the right nucleus constantly discharges inhibitory impulses which will produce a horizontal and rotatory nystagmus to the right side if they are not neutralized by the symmetrical inhibitions of the left nucleus. If the cathode produces an increase of the irritation on the right side, nystagmus, an accumulation of impulses occurs in the left nucleus, and on opening the cathode these are discharged and cause nystagmus to the left. This theory agrees with Abels's explanation in discussing the deceptive impressions of the kinesthetic sense—for instance, the sensation of being lifted up on suddenly letting fall a very heavy weight. This explanation is as follows: If the conditions of irritation of two different nerves whose sensations preserve equilibrium should neutralize each other, and through an external cause be displaced for some time, the sensations of the nerve group which have not been irritated for some time will be destroyed, and a negative after-picture will be produced of the sensation of a movement in the opposite direction to the direction of force.

Abels cites the observation of Jensen, where, after extirpation of the labyrinth galvanic irritation had no effect. On the other hand it must be mentioned that we have had opportunity to examine in the clinic a number of cases where the labyrinth had been extirpated, yet nevertheless on this side a typical galvanic nystagmus could be produced by a correspondingly strong intensity of current. One can only think here that the effect is due to radiations of the current to Deiters's nucleus.

Dr. Abels furthermore discusses the fact of becoming accustomed to vertigo. In the case of pigeons which received for a number of days several hundred rotations always in the same direction, a marked diminution of the head nystagmus was observed, not only on rotation but also on the cessation of rotation. On rotating in the opposite direction, no diminution in the rotatory or after-nystagmus was noted. This can only be explained by assuming an adaptation of the nerve centres. In man, a diminution of the sense of vertigo while learning to dance soon takes place. Ruppert who examined the after-nystagmus in such persons found that the nystagmus seemed much less marked while rotation was in the accustomed direction than when they rotated in the opposite direction. The reviewer has not yet observed such differences in the intensity and duration of the after-nystagmus in passive rotation on the rotating chair. The difference in vertigo is restricted chiefly to the subjective sensations and to the diminution of the movement of reaction.

At the end of his paper Abels describes the short turning movements of the head which under normal conditions occur most frequently. Breuer explains that the reason after-nystagmus does not occur after these rotations lies in the fact that the cupola again returns to the normal by the opposite force to the displacement which occurs in the beginning. According to Abels this only takes place in rotations executed with uniform rapidity and then suddenly is arrested or moved in the opposite direction. The conditions of tension and contact in the ampullary structures must cause a comparatively greater displacement after rapid movements than after slow ones.

Even if we have to contradict emphatically Dr. Abels's statements, and we have no reason to assume that Breuer's hypothesis has been shaken, Dr. Abels nevertheless deserves credit for having first drawn attention to the importance of central processes in the theory of the vestibular apparatus.

BÁRÁNY.

531. HARMAN, N. BISHOP. *The origin of the facial nerve.*

Bishop Harman controverts the hypothesis of Mendel that the orbicularis palpebrarum, frontalis, and corrugator muscles are innervated primarily by the third cranial nucleus;

and the corollary that the orbicularis is innervated by the twelfth nucleus. He shows from his own researches that the facial musculature embryologically is derived directly from the spiracle musculature; that is, it is a visceral musculature which had in its earliest inception a visceral innervation arising from the facial complex nucleus, a visceral nucleus which belongs to the second order of nuclei of Gaskell's classification.

Bishop Harman considers with Edinger that the seventh nucleus forms a chain of nuclei extending some distance in the medulla and not forming, as too many erroneously believe, a single clump. It is the longitudinal position of the nucleus which is the clue to these coincidental paralyses of eye-muscles innervated from the third nucleus and the orbicularis palpebrarum from the seventh, or of the muscles supplied by the twelfth and of the so-called orbicularis oris of the seventh. A lesion in the region of the third nucleus may involve the neighboring dorsal part of the seventh, or one in the region of the twelfth nucleus may affect the not far distant ventral and inferior portion of the seventh nucleus.

HUNTER TOD.

532. GUTHRIE, T. *Development of the mastoid.*

As a result of microscopic specimens of foetal temporal bones ranging from two and a half to seven and a half months of foetal life, Guthrie confirms the fact that the antrum is essentially a part of the middle-ear cleft and is not formed as a diverticulum of the tympanum. Three drawings of specimens are appended.

HUNTER TOD.

GENERAL.

a.—REPORTS.

533. BENTZEN. *Annual Report of the Oto-Laryngological Department of St. Elizabeth's Hospital in Copenhagen.* 1905-1906.

In addition to statistics the report contains the two following case histories:

1. A woman twenty-two years of age with chronic suppurating otitis, headache, and vertigo. Radical mastoid operation performed. Ten days later symptoms of pyæmia.

The sinus was then exposed and found to contain fluid blood, also a small thrombosed vein was found and removed. Recovery followed.

2. A man forty-seven years of age with a facial paralysis of four weeks' standing; pain in the ear for four weeks and some discharge. On the right side there is a serous maxillary sinusitis which is evacuated by puncture. The facial paralysis is improved by electric treatment. JÖRGEN MÖLLER.

b.—GENERAL PATHOLOGY AND SYMPTOMATOLOGY.

534. HAMILTON, ALICE. *Pseudodiphtheria bacilli as cause of suppurative otitis, especially postscarlatinal.* *Jour. Infectious Diseases*, June 15, 1907.

535. HAMILTON, ALICE. *Opsonic index and vaccine therapy of pseudodiphtheritic otitis.* *Jour. Infectious Diseases*, June 15, 1907.

536. DUNN, C. H. *Serum treatment of epidemic cerebrospinal meningitis.* *Boston Medical and Surg. Jour.*, March 19, 1908.

537. RUGANI, L., and FRAGOLA, V. *On the influence of exertion on hearing.* *Arch. ital. di otologia*, etc., xviii., Part 4.

538. JÜRGENS, E. *Affections of the ear, nose, and throat following the explosion of bombs and fire-arms.* *La presse otolaryn.*, 1907, Part 5.

539. BROCK. *Examination of the function of the semicircular canal apparatus in normal individuals and in deaf-mutes.* *A. f. O.*, lxx., pp. 222-262, lxxi., pp. 56-84.

534. HAMILTON, ALICE. *Pseudodiphtheria bacilli as cause of suppurative otitis, especially postscarlatinal.*

Two varieties of pseudodiphtheritic bacilli are especially found in the pus of postscarlatinal otitis media. The first group ferments saccharose but not maltose and is seldom virulent for guinea-pigs; group two ferments maltose but not saccharose and is often more virulent than the former. These varieties are found so frequently in otitis as to render it probable that they play an important part in its causation. No less than 72% of the 43 cases of acute scarlatinal otitis media gave cultures of these bacilli and 20% thereof gave pure cultures. Only 21% of the cases of acute non-scarlatinal otitis gave the same bacilli. The belief that these bacilli may cause suppurative otitis is greatly strengthened by the fact that the opsonic index of the patients for these bacilli has been found to undergo marked variations, and that the

injection of corresponding vaccines appears to definitely modify the course of the infection. CLEMENS.

535. HAMILTON, ALICE. *Opsonic index and vaccine therapy of pseudodiphtheritic otitis.*

Twenty-two cases of otitis media from which the pseudodiphtheritic bacillus had been isolated were selected and their opsonic index to their own strain was determined. The study of the indices obtained offers a strong argument for the pyogenic character of this bacillus. Cases of otitis media which have the pseudodiphtheritic bacillus as the predominating organism in the pus have usually a low opsonic index. Where repeated examinations are made, the index may be found to cover a wide range and the change in the index often corresponds to changes in the clinical symptoms, the amount of discharge increasing as the index falls, and diminishing as it rises. Injections of dead cultures of the strain isolated from the patient results in an increase of the opsonin for that strain. No ill effect follows such injections and an apparent improvement has resulted in several cases, but a more extended experience is necessary before their value is definitely determined. Inasmuch as the opsonin in the blood of such patients is a specific for this variety of bacillus, and because of the fluctuations of the index during the course of the otitis, this apparent improvement is considered strong proof that the pseudodiphtheritic bacillus plays an etiologic rôle in certain forms of otitis media. CLEMENS.

536. DUNN, C. H. *Serum treatment of epidemic cerebro-spinal meningitis.*

The personal experience of the writer with Flexner's serum comprises fifteen cases, in all but one of which the diagnosis was confirmed by the finding of the diplococcus intracellularis. Of these patients eight have completely recovered, two have died, and five are still pending. The recoveries were free from any of the usual sequelæ of the disease. Both the fatal cases had been running for a considerable time before coming under observation. These results appear sufficiently good to afford a strong basis for the belief that the treatment will prove of considerable value. The serum should be used early, lumbar puncture being made as soon



as the disease is suspected, the antiserum being injected through the same needle, without waiting for bacteriological examination if the fluid obtained is notably cloudy. When no fluid is withdrawn it is questionable whether it is a safe procedure, though Dunn has used it in this way without bad results.

CLEMENS.

537. RUGANI, L., and FRAGOLA, V. *On the influence of exertion on hearing.*

After examining soldiers with healthy and affected ears, the authors conclude that exertion always produces a diminution of hearing, which is bilateral and varies according to the intensity of the exertion, and is recovered from after a period of rest of varying duration.

RIMINI.

538. JÜRGENS, E. *Affections of the ear, nose, and throat following the explosion of bombs and fire-arms.*

Thirteen cases of injury to the ear after bomb explosions are related. The ear closest to the site of the explosion was always most involved. In some cases there was an immediate discharge of blood from the ear, while occasionally there was suppuration with a picture of subacute otitis. There was nothing characteristic about the perforation. Vertigo was only complained of in one instance. The main symptom was diminution of the hearing for the low tones, with a tendency to improvement and recovery. No explanation is given why a hemorrhage or concussion should be located in the apex of the cochlea. According to his impression, after a single severe explosion or after repeated explosions, the topographic location of the nerve terminations or the nerve trunk is of less importance than an unknown process, possibly of an inflammatory nature. The results of a single injury, therefore, have a tendency to recover, while repeated injuries do not improve. It is a striking fact that the semicircular canals in these explosions are intact. (To be concluded.)

BRANDT.

539. BROCK. *Examination of the function of the semicircular canal apparatus in normal individuals and in deaf-mutes.*

Under the guidance of Denker the fifty inmates of the Nürnberg deaf-mute institution were carefully examined for

disturbances of hearing and of equilibrium. The results of his examinations as far as they concern disturbances of equilibrium are related in this paper with full literature annotations. His conclusions are as follows:

1. Complete bilateral deafness is in most cases acquired after birth.
2. The result of examination for nystagmus after rotation or the injection of fluids of varying temperature into the ear canals is usually negative in cases of bilateral deafness.
3. For one-sided deafness there is no definite rule.
4. Group VI. of those with better hearing react like those with normal ears to experiments of rotation and irrigation of the ear.
5. Groups I.-V. cannot be arranged in a definite scale as regards the function of the semicircular canals.
6. My investigations have shown that in general the results of the rotatory experiments coincide with the results of the experiments for caloric nystagmus, consequently:
7. For the examination of disturbances of equilibrium and to determine the preserved or lost function of the semicircular canals, Bárány's method of irrigating the ear with warm and cold water and the examination of the consequent nystagmus is very valuable, as this method gives more definite data than can be obtained by the examination of each ear alone for disturbances of equilibrium.
8. The onset of nystagmus in the opposite direction after injecting water above or below body temperature suggests that the movement of the endolymph from the smooth end to the ampulla or in the opposite direction seems to generate an irritation.

ZARNIKO.

#### C.—METHODS OF EXAMINATION AND TREATMENT.

540. STENGER. Simulation and dissimulation of ear diseases and their determination. *Deutsch. med. Wochenschr.*, 1907, No. 24.
541. HALD. Hypopharyngoscopy. *Hospitalstidende*, 1907, No. 17.
542. SCHMIEGELOW. On esophagoscopy, tracheoscopy, and bronchoscopy. *Ugeskrift for Læger*, 1907, Nos. 20-23.
543. HERSHEL. A new aural electrode. *Deutsch. med. Wochenschr.*, 1907, No. 23.
544. STEIN. A new paraffine syringe, with remarks upon the boiling point of paraffine. *Hospitalstidende*, 1907, No. 18.

545. LEUWER. A new aural suction apparatus. *Deutsch. med. Wochenschr.*, 1907, No. 25.

546. VOHSEN. On suction and congestion treatment in affections of the ear and upper respiratory passages. *Münchn. med. Wochenschr.*, 1907, No. 9.

547. BARATOUX. The use of thiosinamine in otology. *La progrès médical*, 1907, No. 3.

548. EYSEL. The results of treating cretins with thyroid substance. *Wiener med. Wochenschr.*, 1907, Nos. 1, 2, 3.

549. MOSZKOWICZ. On the technic of operation on the hypophysis. *Wiener klin. Wochenschr.*, 1907, No. 26.

540. STENGER. *Simulation and dissimulation of ear diseases and their determination.*

Stenger describes the methods advanced by Voltolini, Coggin, Bloch, Lucae, and others for the detection of persons simulating ear disease. It is usually cases of one-sided, rarely bilateral high-grade deafness, also sometimes a simulation of deaf-mutism and ear disease, which one has to deal with, usually in connection with an accident. An objective determination of simulation is not always possible, and in order to detect the fact that an individual is simulating it is necessary for the examiner to be fully acquainted with the disease processes and methods of examination of the ear, as well as to have a good knowledge of human nature. The determination of dissimulation, *i. e.*, the hiding of functional disturbances, is of importance in persons who follow a calling which demands the integrity of their ears. NOLTENIUS.

541. HALD. *Hypopharyngoscopy.*

In addition to a historic review of the development of this method, the author reports a case of carcinoma of the hypopharynx where it was only possible to make a diagnosis by means of hypopharyngoscopy.

JÖRGEN MÖLLER.

542. SCHMIEGELOW. *On esophagoscopy, tracheoscopy, and bronchoscopy.*

In addition to a review of the technic and indications there are many case histories. Of affections of the esophagus there is a case of cicatricial stricture, one of formation of a diverticulum, and two of foreign bodies. JÖRGEN MÖLLER.

543. HERSCHEL. *A new aural electrode.*

The author believes that the electric treatment of the ear

in neuralgia, deafness, and tinnitus from affections of the auditory nerve has met with so little favor because there has been no special instrument, and describes an ear and throat electrode. The reviewer is ready to acknowledge that these electrodes are very practical, but they seem to be extremely complicated. The results are only briefly given.

NOLTENIUS.

544. STEIN. *A new paraffine syringe, with remarks upon the boiling point of paraffine.*

The syringe consists of a solidly built cylinder and piston which present screw surfaces throughout their length. The simple, solid construction of the syringe allows the easy injection of hard paraffine in solid substance.

JÖRGEN MÖLLER.

545. LEUWER. *A new aural suction apparatus.*

Leuwer gives a description, also an illustration, of an apparatus for aspirating pus from the middle ear. The instrument is made of glass with a funnel-shaped tip for the external canal, also a dilated portion for the evacuated pus, and an opening for the attachment of the rubber bulb. NOLTENIUS.

546. VOHSEN. *On suction and congestion treatment in affections of the ear and upper respiratory passages.*

Both on congestion and on aspiration the pharyngeal tubal openings were found to be closed, by means of Hirschmann's endoscope. It is to be assumed that the narrow openings of the pneumatic cells and of the accessory cavities are also closed by the swelling of their mucous membranes. The application of Lugol's solution to the normal pharyngeal mucous membrane causes a greater hyperemia than suction or congestion. The healing influence of congestion on acute and chronic catarrhs of the nose and pharynx cannot be ascertained. In ozæna the crusts could not be any more easily removed. To remove the discharge from the accessory cavities, Vohsen suggests a condensation of air combined with rarefaction which the patient is to perform himself with his nose closed.

SCHEIBE.

547. BARATOUX. *The use of thiosinamine in otology.*

Fibrolysin was injected and thiosinamine instilled into the

auditory canal in fifteen patients without any influence on the deafness or tinnitus. Occasionally some improvement was observed when, in addition to the injections of fibrolysin, mechanical treatment was used. OPPIKOFER.

548. EYSSELT. *The results of treating cretins with thyroid substance.*

Forty-six selected cretins were treated for one year with thyroid substance. They received daily a tablet of 0.3 gr. The results were good as regards growth, especially of the thyroid gland, and the general condition. Of particular interest are the observations regarding the disturbances of hearing and speech. The former varied from slight to complete deaf-mutism. Treatment brought about a definite improvement. Cretins who formerly heard conversation with difficulty, after treatment for from six to twelve months could understand a whisper. Cases with severe affections of speech and hearing approaching deaf-mutism showed practically no improvement. To obtain good results in cases with total defect of the thyroid gland, the treatment must be continued in small doses throughout the life of the patient. In cases, however, in which the glandular function was still present the treatment could be interrupted after two to four years. WANNER.

549. MOSZKOWICZ. *On the technic of operation on the hypophysis.*

This is a description of an operation which has thus far only been performed on the cadaver. In the first stage the nose is displaced upward, the septum, turbinates, and ethmoid are removed, and the sphenoid cavity is opened, but the final bony layer is left intact. A pedunculated flap of skin is then taken from the forehead and placed upon the base of the skull so that its apex projects into the sphenoidal cavity. As soon as this flap has healed, the second stage of the operation is begun and the final bony lamina is removed, and after removal of the tumor the tip of the skin flap is pressed into the base of the sella turcica and a tampon applied. The illustrations describe the method and the necessary instruments. WANNER.



## EXTERNAL EAR.

550. CITELLI. Dermoid cyst of the lobule. *Arch. intern. d'otol.*, etc., xxiii., No. 2.

551. BINDI. Primary epithelioma of the auricle. *Arch. italiano di otol.*, etc., xviii., Part 4.

552. HÉLOT. Worms of the ear. *Arch. intern. d'otol.*, etc., xxiii., No. 3.

553. TÖRÖK. Occlusion of both auditory canals with partial bony obliteration of the tympanic cavity. *A. f. O.*, lxx., pp. 213-218.

550. CITELLI. *Dermoid cyst of the lobule.*

A tumor half the size of a pea, hard and painless, had been present in the left lobule of a patient thirty years old, for six years. Pain occurred after incomplete operation. Healing took place on extirpation. The histological condition is described.

OPPIKOFER.

551. BINDI. *Primary epithelioma of the auricle.*

Report of a case operated upon by the author. There are in addition clinical, histological, and therapeutic observations.

RIMINI.

552. HÉLOT. *Worms of the ear.* The author draws attention to the frequency with which in previous centuries worms were diagnosticated in the ear canal, and the great rôle which they were supposed to play, especially in affections of the head. The author states that in neglected suppurations the larvæ of flies have been found. It is not stated whether this is a personal observation.

OPPIKOFER.

553. TÖRÖK. *Occlusion of both auditory canals with partial bony obliteration of the tympanic cavity.*

A girl, fourteen years of age, presented the following conditions on examination and operation: Bilateral occlusion of the auditory canal at the inner extremity of the membranous part. The bony external meatus and the auricle are normal. The mastoid processes and the tubes are normal. The tympanic cavities are constricted by a bony mass, which in the direction of the oval window and the promontory is adherent to the labyrinth wall. On cutting the membranes the hearing was very much improved.

ZARNIKO.

MIDDLE EAR.

a.—ACUTE OTITIS.

554. SÜPFLE. Studies on the bacteriology of acute otitis. *Zentralbl. f. Bakteriologie*, xlii., 1906.

555. SALAMO. Certain peculiarities of mastoiditis in nurslings. *Arch. intern. d'otol.*, etc., xxiii., No. 3.

556. PREOBRASHENSKI. On the aspiration of pus in acute and chronic otitis. *Jeshemessj atschnik uschnych, gorlowych i nossowych bolesnej*, May, 1907.

557. ESCHWEILER. The treatment of mastoiditis with congestion hyperemia after Bier. *A. f. O.*, lxxi., pp. 85-110.

558. FRÖSE. Further observations on clinical experiences in the treatment of middle-ear suppuration with congestion hyperemia after Bier. *A. f. O.*, lxxi., pp. 1-55.

559. BACON, GORHAM. Some of the lesions of the middle ear due to influenza. *N. Y. Med. Journ.*, April 13, 1907.

554. SÜPFLE. *Studies on the bacteriology of acute otitis.*

At Kummel's suggestion, fifty-seven cases of otitis media were examined bacteriologically. In the normal external canal numerous micro-organisms were found; in 70% of the cases micrococcus pyogenes albus was the organism. Streptococcus or pneumococcus were never present. The normal tympanic cavity in general is sterile. The material examined was divided into meso-tympanic otitis and epi-tympanic otitis after Kummel. It was found, however, that in clinically similar forms bacteria of various kinds were found, while at other times in clinically different forms the same bacteria were present. The following are the author's conclusions:

The number of cases examined is not sufficient to draw any general conclusions. One important fact, however, seems assured, *i. e.*, that our previous views on the bacteriology of otitis media are not well founded. Further bacteriological examinations are required in order to determine this question definitely.

1. Most cases of otitis are due to streptococcus. This is especially to be emphasized, as the general opinion is that pneumococcus is in preponderance.

2. In addition to the streptococcus pyogenes, which was found present in 60% of the exudates, there are other varieties

present such as streptococcus lanceolatus, streptococcus mucosus, and micrococcus pyogenes.

3. The organisms from the group of the chain coccus usually appear in pure cultures. Sometimes they are associated with staphylococcus although this association is of secondary importance.

4. On the other hand the micrococcus pyogenes may be the only inciting factor and then is as important as the chain coccus. This is, however, unusual.

5. Generally clinical pictures cannot be designated according to the bacteriological conditions observed.

6. In the individual case the bacteriological examination does not give us any prognostic data. The probability is, however, that an otitis with a sterile exudate will heal, that a staphylococcus otitis generally will not lead to complications, and that a pneumococcus otitis will rarely do so. If the discharge contains the streptococcus pyogenes or mucosus there is about an even chance for recovery without as with operation.

7. Origin, course, and duration of acute otitis media depend less upon the variety and virulence of the micro-organisms than upon the general or local progress of the disease.

BRÜHL.

555. SALAMO. *Certain peculiarities of mastoiditis in nurslings.*

Cases of mastoiditis in nurslings are not unusual, the author having collected 134 cases from the children's clinic of Broca. The symptomatology is not unusual. The author himself believes that in some of these cases a simple opening of the antrum would have been sufficient, and that the radical operation (in 21%) was probably not so often indicated. As tuberculosis was often present and as the general condition before operation was frequently poor, it is not astonishing that the mortality was 13%.

OPPIKOFER.

556. PREOBRAHNSKI. *On the aspiration of pus in acute and chronic otitis.*

On the basis of his experience the author's conclusions are:

1. Aspiration cleanses the middle ear, relieves the retention and prevents the disintegration of pus.
2. It prevents retraction of the drum and adhesions to the promontory.
3. It favors the closure of perforations of the drum membrane.
4. It can replace paracentesis in small or highly situated perforations.
5. In certain cases aspiration may prevent opening of the mastoid process.
6. An ideal dry method of treatment can only be carried through in conjunction with the aid of aspiration. SACHER.

557. ESCHWEILER. *The treatment of mastoiditis with congestion hyperemia after Bier.*

The author again comes out as an enthusiastic advocate of Bier's congestion hyperemia in the treatment of acute mastoiditis. Eleven cases are reported of which eight were healed. Four were complicated with purulent periostitis over the mastoid process. The recovery of a case of scarlatinal mastoiditis and of a case with decided disturbance of the general condition are especially worthy of note. Of the three cases which were not healed, two died from causes not referable to the hyperemia; the third case was lost sight of. In the appendix three further cases are reported of which one was complicated with diabetes. All of these resulted favorably.

ZARNIKO.

558. FRÖSE. *Further observations on clinical experiences in the treatment of middle-ear suppuration with congestion hyperemia after Bier.*

Continuation of the reports of Isemer in Schwartze's clinic, with a description of eighteen cases, of which eleven (three with bilateral suppuration) were healed after the application of Bier's congestion, combined in three with suction. In five cases a typical mastoid operation had finally to be resorted to. In a sixth case the suppuration continued copious, and in the case of a child the congestion treatment had to be discontinued. The description of the etiology, mastoid complications, duration, and the results of the microscopic and bacteriologic examinations must be

read in the original. In general the congestion was well tolerated, the subjective symptoms being particularly favorably influenced. In some cases inflammation of the auditory canal was brought on; in two cases the treatment led to a middle-ear catarrh in the unaffected ear, and in one case to a hemorrhage from the middle ear in a patient of apoplectic habit. The author concludes as follows:

1. The anatomic structure of the mastoid process and the unfavorable position and narrowness of its natural openings for drainage offer great difficulty to the successful use of the congestion hyperemia of Bier in mastoiditis.

2. Because the vessels which surround the mastoid lie in bony canals and therefore cannot dilate, in the congestion intervals the resorption of the inflammatory foci is interfered with, while during the congestion there is a cumulative irritation in the mastoid and the formation of stasis and sequestration is favored.

3. This unfavorable course seems to be the rule in severe infections of the middle ear and mastoid which before the congestion had not led to subperiosteal abscess. The prognosis is rendered unfavorable even though the ear disease be of short duration, through the presence of adenoids or constitutional diseases.

4. Tuberculosis of the mastoid process can probably not be healed by congestion.

5. The domain of congestion therapy should be limited to cases of mild acute uncomplicated otitis and genuine subacute cases with mastoiditis, and not to recent acute cases with mastoid disease where a periosteal abscess exists on the mastoid process. In the latter cases the simultaneous use of the dry cup is indicated.

6. If paracentesis of the drum membrane is necessary it is important that it should be kept from healing.

7. Chronic suppurations without caries and cholesteatoma seem to be favorably influenced by congestion hyperemia, though they frequently require other treatment. If osteosclerosis is suspected this treatment would not be indicated.

8. Of importance is the determination of the degree of virulence of the organisms. Other things being equal, a



staphylococcus infection seems to make the prognosis more favorable.

ZARNIKO.

559. BACON, GORHAM. *Some of the lesions of the middle ear due to influenza.*

From the statistics of the New York Eye and Ear Infirmary Bacon states that twenty years ago but twelve or, at most, twenty mastoid operations were performed. In 1889, the year that the influenza made its appearance, the number of operations increased very suddenly. In 1897 there were one hundred and sixty-one, and in 1905 five hundred and fifty-five operations. While allowance for the whole increase in the number of patients admitted each year is made, the conclusion is reached, however, that influenza plays a very important part in causing acute inflammation of the middle ear. In some cases of mastoiditis multiple incisions of the drum are recommended to encourage free drainage.

CLEMENS.

b.—CHRONIC PURULENT OTITIS.

560. MUCK. The effect of congestion hyperemia on purulent otitis. *Münchn. med. Wochenschr.*, 1907, No. 9.

561. ISEMER. Two cases of aural vertigo cured by operation. *Münchn. med. Wochenschr.*, 1907, No. 1.

562. STEIN. The after-treatment of radical mastoid operations without packing. *A. f. O.*, lxx., pp. 271-282.

563. GERBER. After-treatment without packing and occlusion of the tube. *A. f. O.*, lxx., pp. 263-270.

564. GERBER. Tubal occlusion after radical mastoid operation. *A. f. O.*, lxx., p. 211.

565. TÖRÖK. Caries of the horizontal semicircular canal associated with unusual clinical symptoms. *A. f. O.*, lxx., pp. 219-221.

566. GOLDSMITH. A case of primary bilateral mastoiditis. *Montreal Med. Jour.*, 1907, xxxvi., p. 696.

567. MILLIGAN. Surgical treatment of labyrinthine suppuration. *British Med. Jour.*, 1907, ii., p. 983.

568. BRYANT, W. SOHIER. Rapid convalescence after mastoid operations. *Laryngoscope*, April, 1907.

560. MUCK. *The effect of congestion hyperemia on purulent otitis.*

In twenty cases of obstinate chronic suppuration of the middle ear, suction was tried for from one to two minutes with

intervals of one minute for a quarter of an hour, with good results. The suction treatment is recommended in acute purulent otitis where the perforation is unfavorably located.

SCHEIBE.

561. ISEMER. *Two cases of aural vertigo cured by operation.*

Chronic purulent otitis with sudden vertigo. No other labyrinth symptoms. Recovery after radical operation.

SCHEIBE.

562. STEIN. *The after-treatment of radical mastoid operations without packing.*

The reviewer reports excellent results in the after-treatment without packing. It is hoped that other operators will now give this method a trial.

ZARNIKO.

563. GERBER. *After-treatment without packing and occlusion of the tube.*

The author has had excellent results with the method of after-treatment of mastoid operations without packing. In order to close the tube, transplantation of Thiersch grafts was often attempted; it is not seen in the case histories, however, with what results.

ZARNIKO.

564. GERBER. *Tubal occlusion after radical mastoid operation.*

For many years the author has attempted to close the tube after radical mastoid operations with paraffine injections. His experiments, however, have failed, possibly because the paraffine was too soft. The most practical method seems to him to be the primary transplantation of epidermis grafts over the tubal opening.

ZARNIKO.

565. TÖRÖK. *Caries of the horizontal semicircular canal associated with unusual clinical symptoms.*

Chronic otitis from scarlet fever. Exacerbation with pain, vertigo, vomiting, and marked nystagmus on looking toward the unaffected side. On asking the patient to fix the finger held a short distance before the eye, there is a sudden decided convergence of the eyeballs. After a few

seconds the eyes return to the normal position. At operation there was found to be a fistula in the horizontal semicircular canal, and cholesteatoma. After operation there was no further vomiting, but still slight vertigo, nystagmus, and some disturbance of convergence.

ZARNIKO.

566. GOLDSMITH. *A case of primary bilateral mastoiditis.*

The patient was a lady, aged sixty-one. An influenzal head-cold was followed a week later by pyrexia and pain in the head. The tympanic membranes were normal and the hearing not impaired. Four days later there was tenderness over the mastoid process, with bulging downwards of the upper and posterior wall of the external meatus. The portion of the membrane still visible appeared normal. Schwartz's operation was performed on both sides; the mastoid cells were found filled with pus, with an extradural abscess over the lateral sinus on the right side. The case made a complete and uninterrupted recovery.

HUNTER TOD.

567. MILLIGAN. *Surgical treatment of labyrinthine suppuration.*

In this paper, Milligan gives the chief paths of infection of the labyrinth from the middle ear; also the ordinary method of opening the vestibule between the external and posterior semicircular canals, after performance of the complete mastoid operation. Illustrative photographs are given together with a special instrument devised by the author to protect the facial nerve during this operation.

HUNTER TOD.

568. BRYANT, W. SOHIER. *Rapid convalescence after mastoid operations.*

The cases reported show the results of treatment by blood-clot in simple mastoid operation; of drawn blood-clot for simple mastoid operation; in an infected mastoid wound after the use of the drawn blood-clot, and an infected case after a mastoido-tympanic operation. Five of the cases show rapid and satisfactory healing by first intention, two cases by second intention after infection and sloughing of the wound. The case of epidural abscess treated by drawn blood-clot was followed by rapid and uneventful healing by first intention.

CLEMENS.

## C.—CEREBRAL COMPLICATIONS.

569. TARTURRI. Severe and sudden endocranial complications in a case of acute purulent otitis. Operation. Recovery. *Bollettino delle malattie dell' orecchio*, xxv., No. 7.

570. HABERMANN. Contribution to the study of cerebral abscess of otitic origin. *Arch. intern. d'otol.*, etc., xxiii., No. 2.

571. DE STELLA. Abscess of the temporo-sphenoidal lobe and otitic meningitis. *Arch. intern. d'otol.*, etc., xxiii., No. 2.

572. DELSAUX. Six cases of thrombophlebitis of the cranial sinuses of otitic origin. *La presse otolaryn.*, 1907, No. 7.

573. RENSCHAW, KNOWLES. Case of radical mastoid operation, with subsequent septic infection and rupture of the lateral sinus. *British Med. Jour.*, 1907, ii., p. 1208.

574. BRONNER, ADOLF. A case of thrombosis of the lateral sinus and obliteration of the jugular vein. *British Med. Journ.*, 1907, ii., p. 982.

575. LANGWORTHY. Thrombosis of the cavernous sinuses. *Boston Med. Jour.*, April 25, 1907.

576. RICHARDS, JOHN D. Case of cerebellar abscess. *N. Y. Med. Jour.*, May 4, 1907.

569. TARTURRI. Severe and sudden endocranial complications in a case of acute purulent otitis. Operation. Recovery.

The patient, twelve years of age, suffered from right-sided purulent otitis. Shortly after onset there was severe headache and vomiting; temperature  $39.8^{\circ}$ ; comatose condition. Right-sided abducens paralysis. At operation an extradural abscess was found in the middle cranial fossa. The external surface of the sinus showed granulations. After the operation the severe endocranial symptoms rapidly disappeared. The paralysis of the right abducens greatly diminished. RIMINI.

570. HABERMANN. Contribution to the study of cerebral abscess of otitic origin.

A patient thirty-one years of age suffered for sixteen years from suppuration of the middle ear on the right side, which led to an abscess of the temporal lobe. Interesting in the history was the fact that the temperature never rose above  $37.8^{\circ}$  C. and that in addition to paralysis of the left arm there was a left-sided anosmia and a left-sided deafness (interference with the tracts in the internal capsule). Operation; recovery. After evacuation of the abscess the paralysis

of the arm and the anosmia disappeared, and the hearing was improved in both ears. OPPIKOFER.

571. DE STELLA. *Abscess of the temporo-sphenoidal lobe and otitic meningitis.*

Abscess of the temporo-sphenoidal lobe and meningitis in the course of a middle-ear suppuration in a patient twenty-five years of age. As the symptoms were indefinite the abscess was not detected until autopsy. OPPIKOFER.

572. DELSAUX. *Six cases of thrombophlebitis of the cranial sinuses of otitic origin.*

If the jugular vein is to be ligated this must be done at a sufficient distance from the place of infection, consequently the ligation must either be done very deep in the neck or it must be performed very early. If the neck shows symptoms of thrombophlebitis the jugular must be ligated in the region of the clavicle. If there are no clinical signs in the neck it is better not to disturb the jugular. Irrigation is used as a means to diminish the severity of the infection but has no influence on the disease of the venous walls. BRANDT.

573. RENSHAW, KNOWLES. *Case of radical mastoid operation, with subsequent septic infection and rupture of the lateral sinus.*

Seven days after the primary operation, at which a small portion of the outer wall of the lateral sinus was exposed, there was pyrexia, followed two days later with a rigor and temperature of 104.8°. On opening the wound there was sharp hemorrhage due to rupture of the outer wall of the lateral sinus which presumably had become septic at the point where it had been exposed at the first operation. In spite of subsequent attacks of intermittent pyrexia, the case recovered without ligation of the jugular vein. A remarkable temperature chart is appended. Antistreptococcal serum was given, but, as in many of such cases, was of no apparent value. HUNTER TOD.

574. BRONNER, ADOLF. *A case of thrombosis of the lateral sinus and obliteration of the jugular vein.*

A case of chronic otorrhœa with pain over the right side of the head for one year. Owing to the occurrence of rigors,



of pain on pressure over the right mastoid, and of swelling of both optic disks, the complete mastoid operation was performed. The sinus was exposed and incised; there was free hemorrhage. An attempt was made to ligature the jugular vein in the neck, but it could not be found nor could the vagus be seen. The facial vein ended in a thickened sheath and a fibrinous band which was evidently the jugular. There was complete recovery. Bronner considers that this case proves that in all cases of suspected disease of the sinus the jugular should be ligatured, even if the upper part of the sinus is apparently normal.

HUNTER TOD.

575. LANGWORTHY. *Thrombosis of the cavernous sinuses.*

A detailed report of four cases following otitis media suppurativa is given. In one was mastoiditis, facial paralysis, thrombosis of the lateral sinus, both cavernous sinuses, and the internal jugular vein. The second case was complicated by an extradural abscess; the third by bronchopneumonia, and the fourth by meningitis. All the cases died from pyemia. The author urges immediate drainage in such cases.

CLEMENS.

576. RICHARDS, JOHN D. *Case of cerebellar abscess.*

This case of cerebellar abscess followed chronic suppurative otitis. It was successfully evacuated and rubber drainage tubes were inserted, which were later replaced by perforated bone tubes. No attempt was made to introduce the finger into the brain or to indulge in unnecessary manipulation. The case is alive and in good health.

CLEMENS.

d.—OTHER MIDDLE-EAR DISEASES.

577. BOTELLA. *Sarcoma of the middle ear.* *Arch. intern. d'otol.*, xxiii., No. 2.

577. BOTELLA. *Sarcoma of the middle ear.*

The patient, forty-three years of age, has had a fetid discharge from the right ear for four months. The canal is filled with small polypi which bleed spontaneously and on microscopic examination prove to be sarcomatous. There is no pain and no facial paralysis. Deafness. On opening the mastoid process it was found that the malignant tumor

started from the aditus. One year after operation no recurrence. A review of the literature is given at the close of the case history.

OPPIKOFER.

NERVOUS APPARATUS.

578. SCHÖNBORN. *Acute cerebral polyneuritis with involvement of the auditory nerves.* *Münchn. med. Wochenschr.*, 1907, No. 20.

579. BÁRÁNY. *Examination of the reflex vestibular and optic ocular movements and their importance for the topical diagnosis of ocular paralyses.* *Münchn. med. Wochenschr.*, 1907, No. 22.

580. STERN. *On cysts in the fourth ventricle.* *Zeitschr. f. klin. Med.*, 1907, lxi., p. 64.

578. SCHÖNBORN. *Acute cerebral polyneuritis with involvement of the auditory nerves.*

Report of a case of acute disease of the left abducens, facial and both auditory nerves with termination in recovery.

SCHEIBE.

579. BÁRÁNY. *Examination of the reflex vestibular and optic ocular movements and their importance for the topical diagnosis of ocular paralyses.*

A case of total paralysis of ocular movements in which irritation of the vestibular apparatus elicited movement of the eyes in a direction of a slow movement of nystagmus, while the rapid movements of vestibular nystagmus as well as optic nystagmus were absent, has led Bárány to assume that the slow movement of nystagmus is vestibular in origin, while the rapid component depends upon voluntary innervation in the contralateral visual centre. This is also suggested by the fact that in narcosis the rapid components are absent in irritation of the vestibular apparatus. The author gives a schematic description of the tract along which the irritation travels in causing nystagmus. Interesting case histories follow which show the importance of vestibular nystagmus for the topical diagnosis of ocular paralysis.

SCHEIBE.

580. STERN. *On cysts in the fourth ventricle.*

The symptomatology and diagnosis of cysts in the fourth ventricle are based on four personal cases and sixty-eight found in literature. Of special importance for diagnosis is the varia-

tion between the onset of severe intracranial symptoms and complete well-being with regression of all focal signs. Almost complete remissions of long duration can occur in (vascular) tumors, though at the time of general well-being there are generally certain focal symptoms if they were present during the period of aggravation. Bruns's local symptom is of importance in diagnosis. The author mentions only this symptom of Bruns described in 1902, and makes no reference to a similar symptom published in 1898 by Schmidt. Schmidt's symptom consists in that the patient on assuming a certain position of the head suffers from vomiting, or vomiting, vertigo, and tinnitus. Schmidt believes he can determine the site of the tumor from the position which the patient assumes. Oppenheim, who was the first to appreciate the importance of position in the onset of attacks of vertigo, and observed this symptom in labyrinth affections, in diseases of the vestibular nerve, the cerebellar peduncles, and cerebellum, was not able to confirm this law of Schmidt. None of these authors has paid any attention to the onset of nystagmus. The reviewer has observed vertigo, rotatory nystagmus, typical vestibular disturbances of equilibrium, nausea and vomiting, as well in diseases of the labyrinth as in diseases of the cerebellum,—as tumors at the base of the skull in the region of the auditory nerve. He regards Schmidt's and Bruns's symptom and Oppenheim's observation as a sign of irritation of the vestibular nerve, either in its peripheral termination or in its course. The symptom, consequently, does not permit any exact localization. The associated conditions, as well as the intensity and frequency of their occurrence, may sometimes permit an exact diagnosis. Stern considers as the cause of Bruns's symptom a sudden increase of intracranial pressure. This is not clear when one considers that in disease of the vestibular nerve the same symptom occurs when there is no possibility of increasing intracranial pressure. In the reviewer's opinion the symptom can be explained on the ground of an abnormal irritability in the area of the vestibular nerve; this causes attacks of nystagmus on slight changes in the position of the head. Stern's observations are interesting on the suggestion treatment of cerebellar ataxia in certain cases. This corresponds with the experience of the reviewer

that in those cases where vertigo and disturbances of equilibrium appear, in the intervening period between the attacks, disturbances of equilibrium without vertigo may be present, of a neurotic nature, which are then amenable to suggestive treatment. It is important, however, not to fall into the error of regarding an organic disease as an hysterical symptom. Disturbances of the cochlear nerve, such as tinnitus and deafness, were observed in only four cases. Meyer regards these as due to compression of the striæ acusticæ. According to many neurologists, disturbances of the acoustic striæ have no influence on the hearing. BÁRÁNY.

#### NOSE AND NASO-PHARYNX.

##### a.—GENERAL PATHOLOGY AND TREATMENT.

581. GUTMANN. External eye diseases in their relation to nasal affections. *Deutsche med. Wochenschr.*, 1907, Nos. 20, 21, 22.

582. HARTMANN. On nasal headache and nasal neurasthenia. *Deutsche med. Wochenschr.*, 1907, No. 18.

583. SHOLLY, A. I. V. Presence of diphtheria bacilli in apparently normal throats. *Jour. Infectious Diseases*, June 15, 1907.

584. BROWN, PHILIP K. Remote effects of tonsillar infection. *Jour. Am. Med. Assn.*, June 15, 1907.

585. DAVIS, DAVID J. Bacteriology of the respiratory tract with especial reference to influenza bacilli. *Jour. Am. Med. Assn.*, May 11, 1907.

586. FRIESNER, I. Unrecognized diphtheria in children. *N. Y. Med. Jour.*, May 11, 1907.

587. ROBERTS, JAY G. A new nasal dressing. *Jour. Am. Med. Assn.*, April 13, 1907.

588. BROWN, RICHARD H. A guarded burr for septal resections. *Laryngoscope*, April, 1907.

581. GUTMANN. External eye diseases in their relation to nasal affections.

If the nasal lachrymal duct ends under the anterior extremity of the inferior turbinate with a wide, well defined opening, the inflammatory products from the nose may extend to the conjunctiva and conjunctivitis may be associated with acute rhinitis. If the termination of this duct extends somewhat beyond the ostium of the bony duct in the nasal mucous membrane, the so-called valve of Hasneri, which is situated on the medial side, may act like a flap and prevent conjunctivitis but may cause lachrymation. Not infrequently

sensory and vasomotor reflex neuroses of the eye may originate in a diseased nose and be cured by appropriate treatment (correction of hypertrophied nasal mucous membrane, spines, spurs, or deviations of the nasal septum, adhesions, etc.). As regards the bacteria of the nose, though they may extend to the conjunctiva by way of the nasal lachrymal duct, they are much more apt to be conveyed in other ways, as by the hands, towels, etc. Examinations in the eye clinic and in the ear clinic in Berlin have shown that in 100 patients with eczema of the conjunctiva and cornea, 93 suffered from a nasal affection which was chronic in 81. Among the nasal affections, adenoid vegetations were the most frequent, occurring in 50%. In chronic conjunctivitis, chronic rhinitis with spurs or deviations of the septum was most frequent. The conditions in dacryocystitis are similar, although here the purulent inflammations of the nasal mucous membrane and of the accessory cavities play an important rôle. It is striking that of these patients 79% were females, while 21% were males. In those suffering from trachoma, 60% of the patients had a chronic nasal affection. The simultaneous presence of tuberculosis of the conjunctiva and of the nasal mucous membrane was observed, but not often enough to decide the question which was the primary disease. Finally the author mentions the coincidence of the occurrence of pemphigus of the conjunctiva and nasal mucous membrane, but remarks that its association was probably accidental.

NOLTENIUS.

582. HARTMANN. *On nasal headache and nasal neurasthenia.*

Hartmann states that Peritz and especially Norström frequently noted that chronic inflammation of the muscles of the neck (sterno-cleido-mastoid, trapezius, splenius), especially when their attachments to the skull are affected, frequently cause severe headache of a migrainal character, which occasionally is rapidly recovered from through massage (Norström), injections of salt solution (Peritz), or faradization (Hartmann). More frequently insufficient nasal respiration causes headache and neurasthenia. In children adenoid vegetations are the principal factors, while in adults, conditions of swelling of the mucous membrane, thickening of



the nasal septum, arrow structure of the nose, depressed nostrils, occasionally disease of the nasal sinuses, rarely polypi, are the chief causes. Depressed nostrils are corrected by Feldbausch's dilator. In most of the other cases appropriate surgical treatment is indicated.

NOLTENIUS.

583. SHOLLY, A. I. v. *Presence of diphtheria bacilli in apparently normal throats.*

Diphtheria-like organisms are found in a certain number of normal throats even when exposure to infection of diphtheria is not traceable. One-third of the organisms isolated from the throats of such persons are virulent and their carriers a source of danger. Virulent bacilli are found four times as often in healthy persons exposed as in those not exposed to the infection.

CLEMENS.

584. BROWN, PHILIP K. *Remote effects of tonsillar infection.*

The tonsil as a source of infection for heart disease has been well shown. The writer has observed recurrent endocarditis and muscular rheumatism occurring in certain of his old patients, and he considers that continued slight fever in children is probably a common result in tonsillar disease, at least in the region where he resides. Unusual complications of pericarditis, pneumonia, and lung abscess are reported. Nephritis without rheumatism is commoner than is usually supposed and occurred four times in his cases. The connection established between the tonsillar cervical route and lung tuberculosis is being more widely recognized.

CLEMENS.

585. DAVIS, DAVID J. *Bacteriology of the respiratory tract, with especial reference to influenza bacilli.*

The experiments were undertaken to determine the frequency of occurrence of influenza-like bacteria in the sputa of persons afflicted with various infectious diseases. In 68 cases of whooping-cough influenza-like bacilli were isolated 61 times; in 23 cases of measles the bacilli were isolated 13 times; in 11 cases of varicella the bacilli were isolated 7 times; in 3 cases of epidemic meningitis the bacilli were found once, and in 12 cases of bronchitis 8 times. Otitis complicating

infectious diseases is due to a variety of organisms, of which the influenza bacilli may be one, but organisms of the streptococcus and diphtheria group are more frequently responsible.

CLEMENS.

586. FRIESNER, I. *Unrecognized diphtheria in children.*

Two illustrative cases are given in detail to show the importance of regular and careful examination of the nose in children where the condition of so-called "cold in the head" exists. In the early stages the examination reveals an acutely inflamed mucosa, but later, more or less typical diphtheritic membrane develops. A careful bacteriological examination should be undertaken in all suspected cases.

CLEMENS.

587. ROBERTS, JAY G. *A new nasal dressing.*

Two splints are cut from a sheet of paraffine conforming in shape to the Simpson nasal tampon but about  $\frac{1}{8}$  of an inch longer. The tampon is placed between the two strips of paraffine, to which it is cemented by means of aristol-collodion. Any desired thickness may be secured by using the different thicknesses of the Simpson tampon. After being placed in position the moisture causes the cotton to swell and the paraffine is forced against the septum and outer wall of the nasal cavity, controlling hemorrhage and making an ideal non-irritating, protective dressing. The tampon can be removed *en masse* without pain, there being no adhesion.

CLEMENS.

588. BROWN, RICHARD H. *A guarded burr for septal resections.*

The instrument consists of a guarded drill or burr running in a steel-tube sheath which fits on a White dental handle. The guards can be arranged to project beyond either side of the tip of the drill to protect the membrane and to act as guides as well.

CLEMENS.

b.—OZÆNA.

589. OKUNEW. A case of symmetrical atrophy of the skin and submucous tissue of the sides of the nose in ozæna. *Russische Monatsschr. f. Ohrenheilk.*, etc., April, 1907.

589. OKUNEW. *A case of symmetrical atrophy of the skin and submucous tissue of the sides of the nose in ozæna.*

In a patient suffering from ozæna for many years, the author observed symmetrical triangular depressions about the size of the tip of the little finger, on the sides of the cartilaginous portion of the nose near the junction with the bony portion, and situated in the substance of the cartilage. The skin and submucous tissue in these places were markedly atrophied. This was probably due to a tropho-neurosis of the cutaneous terminations of the ethmoidal nerves. The depressions were corrected by paraffine injections and the shape of the nose was restored.

SACHER.

C.—TUMORS.

590. SCHMIDT. *A bleeding polyp on the lower turbinate.* *Arch. f. Laryngol.*, xix., Part 3.

591. CITELLI. *A case of melanosarcoma of the nasal mucous membrane.* *Arch. intern. d'otol.*, etc., xxiii., No. 3.

592. DENKER. *On the operation of malignant tumors of the nose.* *Arch. f. Laryngol.*, xix., Part 3.

590. SCHMIDT. *A bleeding polyp on the lower turbinate.*

This tumor was as large as a pea, bluish-red in color, and situated on the right lower turbinate. Microscopic examination showed the tumor to consist of a great many blood-vessels which were separated from one another by connective tissue.

VON EICKEN.

591. CITELLI. *A case of melanosarcoma of the nasal mucous membrane.*

The melanosarcoma in this patient, sixty-eight years old, was situated in the region of the middle turbinate, and had extended into the orbit and antrum. No operation was done. Death with symptoms of meningitis two years after the beginning of the disease. Microscopic examination confirmed the diagnosis of melanosarcoma. The statement that the nasal mucous membrane is always free from pigment is not correct.

OPPIKOFEK.

592. DENKER. *On the operation of malignant tumors of the nose.*

Report of two cases of malignant tumors which were operated upon after Denker's method. The first recovered

and there has been no relapse up to seven months after operation. The second case died of meningitis. The operation of Denker enables the field of operation to be freely exposed and has the advantage of less danger of aspiration pneumonia and the absence of every disfigurement.

VON EICKEN.

d.—NASAL SEPTUM.

593. ANTON. *Partial congenital atrophy of the nasal mucous membrane. A contribution to the etiology of perforation of the septum. Prag. med. Wochenschr.*, 1907, No. 21.

594. VAN DEN WILDENBERG. *A new speculum for intranasal resections. Arch. intern. d'otol.*, xxiii., No. 3.

593. ANTON. *Partial congenital atrophy of the nasal mucous membrane. A contribution to the etiology of perforation of the septum.*

In the examination of 130 cadavers of children Anton found three cases of congenital partial atrophy of the nasal mucous membrane in the anterior part of the nasal septum and believes that this atrophy can be held responsible in many cases for perforations of the septum. HARTMANN.

594. VAN DEN WILDENBERG. *A new speculum for intranasal resections.*

For the submucous resection of the septum the author gives a picture and description of a nasal speculum which enables one to observe the detachment of the mucous membrane and cartilage from the floor of the nose. The short branch lifts the soft parts of the nose from the septum and the long branch is placed between the detached mucous membrane and the exposed cartilage. OPPIKOEFER.

e.—ACCESSORY CAVITIES.

595. FISH, H. MANNING. *A study of optic neuritis in connection with nasal accessory-sinus disease. British Med. Jour.*, 1907, ii., p. 1218.

596. SCHADLE, J. E. *Antral sinusitis as an etiological factor in the production of hay fever. Med. Record*, May 25, 1907.

597. HEIMERDINGER. *On the pathological anatomy of the maxillary antrum. Arch. f. Laryngol.*, xix., Part 3.

598. ALAGNA. *On the pathological histology of chronic maxillary sinusitis. Archivio italiano di otologia, etc.*, xviii., Part 4.

599. GOLDMANN and KILLIAN. On the use of X-rays to determine the extent of nasal accessory sinuses and their diseases. *Beitr. zur klin. Chirurgie*, liv., Part 1.

600. D'ACUTOLO. On the incorrect diaphanoscopy of the antrum of Highmore. *Bollettino delle malattie dell' orecchio*, etc., xxv., No. 8.

601. COMPAIRED. A case of ethmoidal mucocele. *Arch. intern. d'otol.*, etc., xxiii., No. 3.

602. MALJUTIN. Cases of inflammation of the frontal sinus. *Russkij Wratsch.*, 1906, No. 51.

603. HAJEK. On operative methods in inflammation of the frontal sinus. *Wiener med. Wochenschr.*, 1907, No. 18.

604. STEPPETAT. On foreign bodies in the frontal sinus. *Arch. f. Laryngol.*, xix., Part 3.

605. LEVINGER. Pneumocele of the frontal sinus. *Arch. f. Laryngol.*, xix., Part 3.

606. SEVER, J. W. The Bier suction treatment of tuberculous sinuses. *Boston Med. and Surg. Jour.*, June 6, 1907.

607. MOSHER, H. P. A case of fatal meningitis after removal of the anterior end of the middle turbinate. *Boston Med. and Surg. Jour.*, May 30, 1907.

595. FISH, H. MANNING. A study of optic neuritis in connection with nasal accessory-sinus disease.

The importance of recognizing the fact that an affection of the optic nerve may be due to disease of any of the nasal sinuses has again been drawn attention to by Fish in an interesting and valuable paper.

Fish first discusses the various symptoms of sinusitis in its various forms. This paper is based on the examination of the nose and its accessory sinuses in a series of thirty-six consecutive cases of so-called idiopathic optic neuritis. Nasal accessory-sinus disease was found to be present twenty-six times. The direct causal relationship was shown in fifteen cases by the improvement in the ocular condition following drainage, and on *a priori* grounds the eleven remaining cases were also attributed to the same cause although the connection could not be demonstrated by any ocular improvement. The author emphasizes the importance of thorough examination of the sinuses in all cases of optic neuritis, especially if there is no definite lesion to account for the cause. Sinus disease as a cause of glaucoma is probably more frequent than hitherto supposed.

In chronic sinus disease with its ever-recurring exacerba-



tions, iridectomy often fails to cure glaucoma, and the eye goes on to gradual loss of function. Fish emphasizes that a negative nasal finding does not exclude sinus disease, and furthermore is convinced that accessory-sinus disease, in place of being a rare condition, is the most frequent cause of an affection of the optic nerve.

A table of the author's own cases and of other cases of optic neuritis due to sinusitis is appended. HUNTER TOD.

596. SCHADLE, J. E. *Antral sinusitis as an etiological factor in production of hay fever.*

The theory is advanced that catarrhal sinusitis of the antrum of Highmore is an important causative factor in the production of hay fever and of the commoner forms of catarrhal disease of the nasal tract. It is stated that where the ostium maxillare is of a normal size the affection does not occur, but where disease, malformation, or injury has made the antrum opening of sufficient size to admit germs to its interior, it does occur. Ninety-one cases have been treated by washing out the antrum and following it with an insufflation of thymol iodide. Only one failure followed, one was not benefited, and most were all cured of the hay fever in from one to two weeks and remained so. CLEMENS.

597. HEIMERDINGER. *On the pathological anatomy of the maxillary antrum.*

Report of a case of cholesteatoma and one of cholesterin cyst of the maxillary cavity, with microscopic examination. In the first case, a patient with ozæna, an opening had previously been made between the antrum and the nose. On again opening the cavity a large, onion-shaped, bulging mass was found which contained cholesterin crystals. The author raises the question whether this formation took its origin from the metaplastic epithelium of the ozæna.

Case 2 was that of a diseased maxillary cavity in which a cyst was found in the region of the maxillary foramen. Numerous cholesterin crystals and giant cells were present.

VON EICKEN.

598. ALAGNA. *On the pathological histology of chronic maxillary sinusitis.*

The pathological and histological conditions of the mucous membrane of the maxillary sinus in chronic empyema are described. After describing the pathological change in the epithelium, the subepithelial layer is described. This consists in changes in the blood-vessels and glands, through polypi and papillomatous growths, and in the presence of plasma cells and their degenerative forms. The literature is given.

RIMINI.

599. GOLDMANN and KILLIAN. *On the use of the X-rays to determine the extent of nasal accessory sinuses and their diseases.*

This paper is illustrated with sixteen Roentgen photographs, and discusses the diagnostic value of X-rays in determining the extent of the nasal cavities and in diseases of the ethmoid cells and maxillary antrum. Observations are made in sagittal section with the aid of Albers's diaphragm. The patient is placed with his forehead on the plate. The diaphragm is so arranged that the occipital protuberance occupies the centre of the aperture. The duration of exposure varies from  $1\frac{1}{2}$  to 2 minutes with a soft or semifluid tube. It can be definitely determined whether any frontal sinus is present, as the configuration of the frontal sinus and its size can be well made out. From a certain veiling of the picture, disease of the frontal sinus, ethmoid cells, or maxillary sinus can be determined.

HARTMANN.

600. D'ACUTOLO. *On the incorrect diaphanoscopy of the antrum of Highmore.*

The author transilluminates the maxillary sinus with Vohsen's lamp from the outside, placing it against the lower orbital edge. In a normal sinus the hard palate and the molar portion of the alveolar processes on the same side are light. This method of transillumination of the antrum of Highmore offers, according to the author, a number of advantages.

RIMINI.

601. COMPAIRED. *A case of ethmoidal mucocoele.*

A man, nineteen years of age, suffered from a right-sided mucocoele of the ethmoid cells. Of interest is the rapid growth and the size of the mucocoele.

OPPIKOFEK.

602. MALJUTIN. *Cases of inflammation of the frontal sinus.*

Two cases are described. In the first, during the operation, a very unusual anomaly was found, namely, absence of the posterior wall of the frontal sinus. In the second case, which was one of syphilitic affection of the frontal sinus, the process extended to the less yielding anterior wall, while the posterior wall was unaffected.

SACHER.

603. HAJEK. *On operative methods in inflammation of the frontal sinus.*

This is an address before laryngologists and ophthalmologists in which the various methods of operating are described and Kuhnt's method is recommended in cases of uncomplicated acute empyema. The author furthermore describes his modification of Killian's operation. In the more difficult cases he separates the soft parts from the orbit completely, so that the lower wall of the frontal sinus is freely exposed. Drainage of the nasal cavity then can be accomplished from the ethmoid. Of the nasal process only the posterior margin is removed. Seven cases have been operated upon according to this method. Notwithstanding the detachment of the trochlea, disturbances of vision and of the eye muscles disappeared eight days after operation.

WANNER.

604. STEPPETAT. *On foreign bodies in the frontal sinus.*

About sixty small pieces of porcelain were removed from the frontal sinus of a patient. Four years previously a coffee cup had been thrown against the patient's head, at which time the foreign bodies penetrated the sinus but gave no symptoms. The subsequent onset of pain made the operation necessary.

VON EICKEN.

605. LEVINGER. *Pneumocele of the frontal sinus.*

After operation on the frontal sinus according to Killian there was, on blowing the nose, a marked protrusion of the soft parts and cutaneous emphysema. At the second operation the scar tissue in the region and the flap of mucous membrane having been curetted, healing followed.

VON EICKEN.

606. SEVER, J. W. *The Bier suction treatment of tuberculous sinuses.*

Sixteen cases are here reported treated by this method combined with compression, and eight of this number were either wholly healed or improved; in five the conditions were not improved locally but there was a distinct gain in weight and color index; three lost ground to such an extent treatment had to be discontinued. Cases of long standing were not as greatly benefited as those of a shorter period of time. This treatment is recommended as a routine measure in every case of sinus disease.

CLEMENS.

607. MOSHER, H. P. *A case of fatal meningitis after removal of the anterior end of the middle turbinate.*

The operation was performed in the usual way to aid drainage in a case of suppuration existing for several years. After thorough cleansing, the middle meatus was packed with sterile gauze which was removed the following morning and the antrum carefully syringed. At this time the case complained of severe frontal headache followed later by severe mental symptoms. The frontal sinus was opened and found full of pus although no communication with the cerebral cavity could be located. A few days later, the patient died. The operator is of the opinion that the nasal packing walled back the pus and infected the meninges through the cribriform plate.

CLEMENS.

#### f.—OTHER DISEASES OF THE NOSE.

608. AVELLIS. *On personal observations in the treatment of hay fever.* *Münchn. med. Wochenschr.*, 1907, No. 11.

609. HEYMANN. *Contribution to the study of hay fever.* *Arch. intern. d'otol.*, etc., xxiii., No. 3.

610. BAERWALD. *Alpine hay-fever stations.* *Deutsche med. Wochenschr.*, 1907, No. 17.

611. BOESSER. *Treatment of asthma due to hay fever.* *Deutsche med. Wochenschr.*, 1907, No. 25.

612. BERLINER. *Therapeutic indications in nervous affections.* *Wiener klin. Rundschau*, 1907, No. 25.

613. MELZI. *An aberrant tooth in the right nasal cavity.* *Arch. intern. d'otol.*, etc., xxiii., No. 3.

614. PORAS. *A case of primary lupus of the mucous membrane.* *Arch. f. Laryngol.*, xix., Part 3.

615. STREIT. Further conclusions on scleroma. *Arch. f. Laryngol.*, xix., Part 3.

616. SCHLOSSER. Successful operation on tumor of the hypophysis by way of the nose. *Wiener klin. Wochenschr.*, 1907, No. 21.

608. AVELLIS. *On personal observations in the treatment of hay fever.*

In the period before the attacks the nose is treated every year with the galvano-cautery, and during the attacks pollantin or graminol is tried. Of advantage is Ritsert's rhinokulin, used as a powder or salve, either alone or in conjunction with the pollantin treatment. Only in the event of complication with asthma is it necessary to recommend a change of climate for the patient. SCHEIBE.

609. HEYMANN. *Contribution to the study of hay fever.*

In addition to the usual routine treatment Heymann recommends tablets of thyroid extract. Three patients who took this medicine for some time before the onset of the hay-fever period, remained free from the disease. In sixteen others there was an improvement. OPPIKOFER.

610. BAERWALD. *Alpine hay-fever stations.*

Baerwald, who himself is a very sensitive hay-fever patient, has observed that certain points in the high Alps, especially Pontresina, and the still more highly situated Bernina houses, are suitable places in which patients may pass the dangerous time of the flying of pollen. For those patients who suffer from nervous cardiac symptoms and who do not feel well in the high air of the Alps, Baerwald recommends Lenzerheide, which is 1500 metres high, while Arosa, which is somewhat higher, is not to be recommended. NOLTENIUS.

611. BOESSER. *Treatment of asthma due to hay fever.*

In addition to recommending corticin for the favorable action which it exerts on the erectile tissue of the nose, Boesser endorses atropin-corticin injections for their action on the engorged bronchial mucosa, claiming an early and permanent result in hay-fever asthma. NOLTENIUS.

612. BERLINER. *Therapeutic indications in nervous affections.*



Berliner found that if in nervous rhinitis and asthma the constant current is applied to a place on the septum situated posteriorly, and a second place 6cm from the nasal opening at the base of the septum, tickling, a tendency to sneeze, coughing, and increased secretion follow. In order to be successful in causing a diminution of symptoms the procedure must be followed for from twelve to fourteen days. A weak current is begun with, which is gradually increased to five milliamperes. In vasomotor rhinitis Berliner recommends a nasal salve, "rhisan," which is a combination of athrolen and ung. dericini.

WANNER.

613. MELZI. *An aberrant tooth in the right nasal cavity.*

In a child with hereditary syphilis a tooth projected into the right lower nasal opening. In the superior maxillary the right middle incisor was missing.

OPPIKOFER.

614. PORAS. *A case of primary lupus of the mucous membrane.*

Without any evidence of lupus externally, there were found the characteristic changes of lupus in the mucous membrane of the nose, tonsils, uvula, epiglottis, and right arytenoid.

VON EICKEN.

615. STREIT. *Further conclusions on scleroma.*

The importance of histological examination for the proper diagnosis of scleroma is emphasized. The differential diagnosis between Friedländer bacillus and scleroma bacillus is not yet possible with our present methods. It is not yet possible to assert that the so-called scleroma bacillus is the sole exciter of scleromatous processes. It is, in fact, very probable that the invasion of the tissues by the scleroma bacillus causes the hyperplastic stages of the disease.

VON EICKEN.

616. SCHLOSSER. *Successful operation on tumor of the hypophysis by way of the nose.*

Schlosser presents the case of a patient, thirty years of age, in whom eight weeks previously he had performed a partial extirpation of a tumor of the hypophysis with good result.

The patient suffered for seven years with excruciating headache, and in addition for two years from anemia and loss of hair; for one year from bi-temporal hemianopsia. The diagnosis was verified by X-ray, which showed a widening of the sella turcica to the capacity of a large nut. The enlargement of the sella turcica in such cases may be of a threefold nature, —without change in the entrance, a widening of the same, or a combination of both. The first are suitable for operation, the second are not operable, while in the third, decision is difficult.

The operation is performed as follows: After detaching the entire nose, the turbinates and septum are excised, and the inner wall of the antrum of Highmore and the orbit near to the optic foramen, and a part of the nasal process of the left superior maxillary, are removed; the ethmoid cells and sphenoid cavity are now opened. In order to be able to judge correctly, Schlosser had previously measured in an X-ray picture the distance between the bony root of the nose and the anterior wall of the sella turcica; at exactly this distance (5.3cm) there was a bony lamina which could be easily broken through. The tumor which presented after incision into the dura was removed in layers with moderate hemorrhage. The cavity in the sella turcica was packed with gauze saturated with balsam of Peru. Histologically the tumor proved to be an adenoa. No symptoms of any disturbance following the loss of the hypophysis were observed. As there was no particular hemorrhage even during the clearing out of the nose, and as no meningitis followed, the author does not consider the method particularly difficult. After a time there appeared to be an increase in growth.

WANNER.

g.—NASO-PHARYNX.

617. FITZWILLIAM, DUNCAN C. L. Suppuration in the region of the pharynx. *The Practitioner*, lxxix., 1907, p. 811.

618. JANQUET. Two cases of naso-pharyngeal polypi operated upon by different methods. *La presse oto-laryngologique*, 1907, Part 7.

619. FULLERTON, ROBERT. Teratoma arising from the right tonsillar region. *British Med. Jour.*, 1907, ii., p. 963.

620. WORTHINGTON, T. C. A simple method of excision of the faucial tonsil. *Jour. Am. Med. Assn.*, May 25, 1907.

617. FITZWILLIAM, DUNCAN C. L. *Suppuration in the region of the pharynx.*

In this paper, based on extensive practical experience, and which is worthy of perusal in its original form, Fitzwilliam considers the miscellaneous abscesses found in the region of the pharynx, and endeavors to draw a sharp distinction between each on anatomical, pathological, and clinical grounds; and especially directs attention to the too little recognized form of suppuration between the mucous membrane and the pharyngeal fascia, to which he applies the term post-adenoid abscess.

The cases are divided into the following groups:

1. *Quinsy* or suppuration in or around the tonsil. In the latter situation the abscess lies chiefly in the soft palate and either palatal or peritonsillar abscess is a better term to apply. The pus is always superficial to the pharyngeal aponeurosis.

2. *Retropharyngeal abscess* is the name here given to suppuration which starts in the retropharyngeal space. This variety lies wholly outside the pharyngeal walls between the bucco-pharyngeal aponeurosis and the prevertebral layer of the deep cervical fascia.

3. *Post-adenoid suppuration* lies between the lymphoid tissue in the mucous membrane and the pharyngeal aponeurosis.

4. *Suppuration or caseation in the deep cervical glands*, lying in relation to the carotid sheath, may extend inwards to the lateral pharyngeal wall.

5. *A cold abscess due to spinal caries* lies behind the prevertebral layer of the deep cervical fascia.

A clear account is given of the etiology, diagnosis, and treatment of these several conditions. In thirty-two cases of retropharyngeal abscess, it was situated only four times in the middle line. This is presumably due to the lateral position of the lymphatic glands and to there being more room in this region for the accumulation of fluid. Fitzwilliam doubts if an "acute" retropharyngeal abscess ever exists, but considers the condition is frequently overlooked in its earlier stages, being only first noticed when the more serious symptoms of dyspnoea and dysphagia occur. An

important point in diagnosis is the absence of rigidity of the neck which at once differentiates the condition from an abscess due to spinal caries. The possibility of a fatal issue suddenly occurring from the bursting of a large abscess during sleep is, according to Fitzwilliam, practically unknown; even if the case be left to nature, rupture of the abscess will take place gradually through one or more small openings rather than by sudden evacuation of its contents. Post-adenoid abscess is of rare occurrence and may be considered analogous to suppuration occurring between the lymphoid tissue of the tonsil and pharyngeal aponeurosis. The symptoms, in addition to those associated with adenoids, are a recent sore throat, rapid increase of the nasal obstruction, and enlargement of the glands below the angle of the jaw. On examination a characteristic, firm, cystic swelling may be felt, covered with adenoid growth, and feeling quite different from the ordinary soft sensation of adenoids. The abscess is rarely of any great size and is situated in the middle line, but may extend forward on to the roof of the naso-pharynx; a position never assumed by a true retropharyngeal abscess. With regard to treatment, incision through the mouth is advocated for quinsy, retropharyngeal and post-adenoid abscess, care being taken that the incision is sufficiently adequate to prevent accumulation of the purulent contents. If the abscess is due to suppuration of the cervical glands or to spinal caries, it must be opened by an external incision.

HUNTER TOD.

618. JANQUET. *Two cases of naso-pharyngeal polypi operated upon by different methods.*

One tumor was removed after resection of the facial bones, the other by the natural ways with the help of the curette. The author claims that the electrolytic method is not advisable in cases where celerity is an object, as it is very slow and requires a great many sittings. The galvano-cautery also requires much time and is dangerous as the crusts may prove a source of infection and hemorrhage. Rapid removal with curette by the natural passages seems to be the best method, especially if the tumors can be reached well. It is not possible yet to suggest a method that will be suitable for

every case. Each tumor must be carefully examined therefore, and treated accordingly. BRANDT.

619. FULLERTON, ROBERT. *Teratoma arising from the right tonsillar region.*

A large, fleshy growth, apparently arising from the right tonsil and extending across the oropharynx until almost in contact with the left side of the fauces, was removed by operation. Eight months later there was no recurrence. The nature of the tumor was doubtful; in parts resembling a round- and spindle-celled sarcoma, in other parts a fibromyoma. From the variety of the structure and from the presence of large cells in a matrix resembling cartilage, the tumor was considered to be a degenerated teratoma. HUNTER TOD.

620. WORTHINGTON, T. C. *A simple method of excision of the faucial tonsil.*

The simplicity consists in the use of the Seiler knife, which is double-edged, curved on the flat, and devised for septal work. The patient holds the tongue depressor, the extreme upper part of the tonsil is seized with a Pyncheon forceps and drawn downward and forward, and the attachments to the fossa are severed with the knife. The tonsil is then seized at a lower point and pulled on lightly while the knife is drawn firmly down its length just within the anterior pillar, dividing the triangular fold and disclosing the glandular tissue within. CLEMENS.

#### PALATE, PHARYNX, AND BUCCAL CAVITY.

621. PONTI. *Adenocarcinoma of the soft and hard palate. La pratica oto-rino-laryngoiatrica*, vii., Part 3.

622. SWERSHEWSKI. *Hard chancre of the tonsils. Medizinskoje Obosrenje*, 1906, No. 22.

623. HAMM and TORHORRT. *On the pathology of pharyngeal keratosis with especial regard to the bacteriology. Arch. f. Laryngol.*, xix., Part 3.

624. WOLF. *Rare localization of mycosis leptothrix. Arch. f. Laryngol.*, xix., Part 3.

625. SOMMER. *Lipoma of the tonsil. Arch. f. Laryngol.*, xix., Part 3.

626. SCHEIER. *Diseases of the mouth in glassblowers. Arch. f. Laryngol.*, xix., Part 3.

621. PONTI. *Adenocarcinoma of the soft and hard palate. Report of a case with histological examination. The*



various tumors which occur on the soft and hard palate are mentioned.

RIMINI.

622. SWERSHEWSKI. *Hard chancre of the tonsils.*

The author describes seventeen cases of atypical syphilitic infections of the tonsils. Characteristic of the infections were: 1. The one-sided localization of the disease; 2. One-sided enlargement and hardening of the lymph-glands; 3. Hard floor and border of the ulcer; 4. Long duration of the disease.

SACHER.

623. HAMM and TORHORRT. *On the pathology of pharyngeal keratosis with especial regard to the bacteriology.*

The authors regard the capsulated bacillus which they have discovered as the cause of the disease, which seems to be confirmed by the results of agglutination. The capsulated bacilli show an extremely high animal pathogenesis. Treatment consists in the mechanical removal of the plaques, and the application of glycerinated iodine.

VON EICKEN.

624. WOLF. *Rare localization of mycosis leptothrix.*

The considerably enlarged pharyngeal tonsil was covered with small and large plaques, which were also present in Rosenmüller's fossa.

VON EICKEN.

625. SOMMER. *Lipoma of the tonsil.*

Microscopic description of the tumor, which was yellowish white in color, about the size of a hazel nut, and was removed from the upper pole of the right tonsil.

VON EICKEN.

626. SCHEIER. *Diseases of the mouth in glassblowers.*

Scheier examined numerous glassblowers and in 6% of them found dilatation of Stenson's duct. The cheeks were often distended in balloon formation so that emphysema of the cheeks was sometimes noted. The mucous membrane of the cheeks often showed grayish-white plaque-like thickenings. The incisor teeth are colored dirty gray and are ground down from use. The lips often show fissures and cracks. The circumference of the neck is increased through venous congestion. The author draws attention to the great danger of the spread of syphilis among glassblowers because of the passing of the mouthpiece from mouth to mouth, and makes suggestions for overcoming this evil.

VON EICKEN.

## BOOK REVIEWS.

**I.—Principles and Practice of Modern Otology.** By Dr. J. F. BARNHILL, Professor of Otology, Indiana University School of Medicine, and Dr. E. de W. WALES, Associate Professor of Otology, Indiana University School of Medicine. 575 pages. 305 illustrations. W. B. Saunders Company, Philadelphia and London. 1907. Price, \$5.50 net.

The authors in writing this book have kept the following objects in view as stated in the preface: 1. To modernize the subject; 2. To correct certain traditional beliefs; 3. To advocate the earliest possible prophylaxis or treatment; 4. To emphasize the importance of a thorough examination and a definite diagnosis as a basis for rational treatment; 5. To thoroughly illustrate the text.

They have admirably succeeded in their task and have furnished an excellent text-book, the best of the larger Otologies in English. Dr. Barnhill is responsible for the greater part of the book; the chapters on anatomy, physiology, and bacteriology are contributed by Dr. Wales. A. K.

**II.—A Text-book of the Diseases of the Nose and Throat.** By Dr. D. BRADEN KYLE, Professor of Laryngology and Rhinology, Jefferson Medical College. 797 pages. 219 illustrations. Fourth edition. W. B. Saunders Company, Philadelphia and London. 1907. Price \$4.00 net.

In this new fourth edition many new articles have been added and many chapters have been re-written. The book has not only been brought up to date but improved and should continue to enjoy the favor which it has deservedly won for itself. A. K.

**III.—Diseases of the Nose and Throat.** By HERBERT

TILLEY, Surgeon to the Ear and Throat Department, University College Hospital, etc. 539 pages. 126 illustrations. London: H. K. Lewis, 136 Gower Street, W. C. 1908. Price 14 shillings net.

This is a brief and practical treatise on the diseases of the nose and throat, which can be recommended as a guide and an introduction to the study of this important specialty.

A. K.

IV.—**The Labyrinth of Animals.** By ALBERT A. GRAY, Aural Surgeon to the Victoria Infirmary, Glasgow. Volume II. London: J. & A. Churchill, 1908. (P. Blakiston's Son & Company, Philadelphia.) Price \$10.00 net.

The second and final volume of this magnificent atlas has now appeared. The publication of this volume was assisted by the Carnegie Trust. The study of the mammalian labyrinth is concluded and the labyrinth of birds, reptiles, and amphibians is described. This is illustrated by forty-five plates for stereoscopic observation. Explanatory text accompanies each plate and there are chapters on the venous system of the labyrinth of mammals, and general remarks on the anatomy of the labyrinth of birds and of reptiles, with a table of measurements.

The labyrinth, which in late years has been foremost in general interest from a surgical, clinical, and physiological view-point, receives a notable contribution to the subject of its anatomy by the appearance of this atlas.

A. K.